Railway Age

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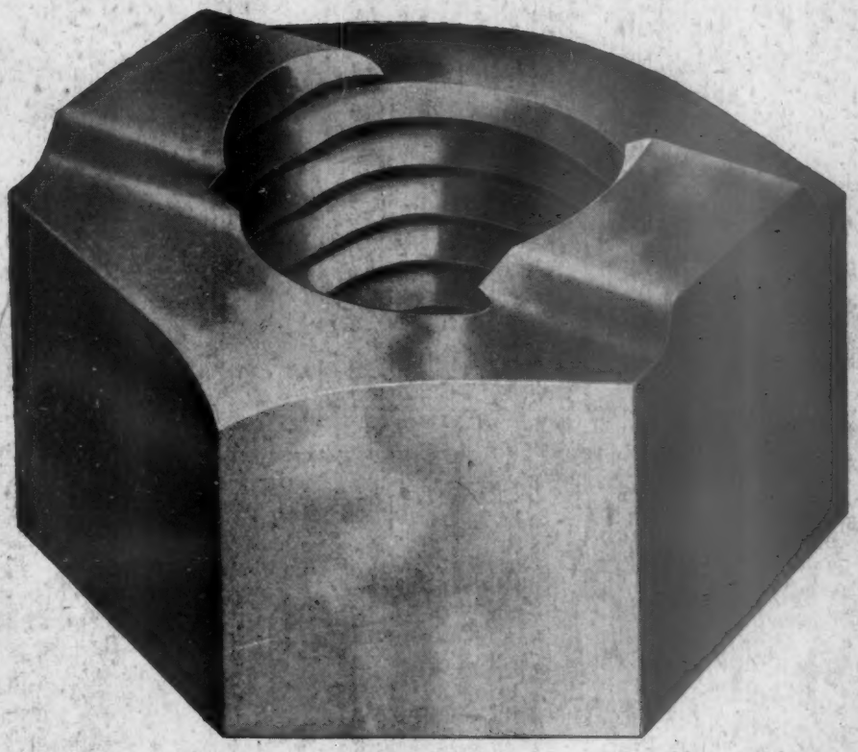

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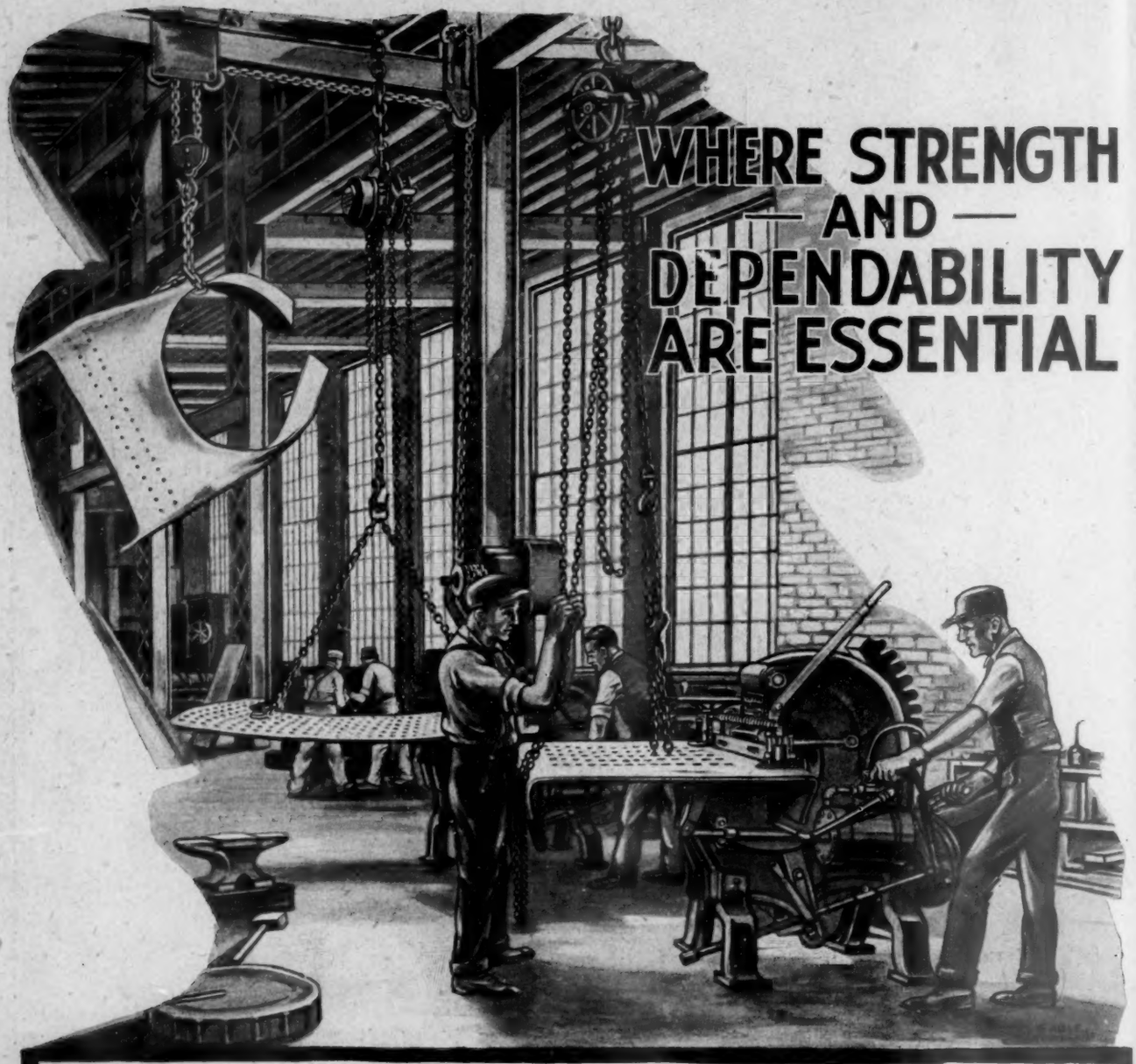

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EDITORIAL

Railway Age

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Improvement in Dining Car Service

In general dining car service is an expense, not a source of revenue. On the other hand, in no other class of service possibly was it feasible to make a quick and obvious change after the roads were returned to private operation. Many roads, both in the east and west, have been prompt to recognize this fact and progressive passenger departments have seized the opportunity here presented. A really well-served, good meal at a reasonable price in these days of bad service and high prices will go far toward making sympathetic friends for the railroads. No other class of advertising is more effective. The passenger traffic managers who are making larger appropriations under this head and who are holding their dining car superintendents up to a higher standard than ever before are pretty surely right, and they should have the support of their executives. It is good public policy. It may take years to reinstil courtesy into trainmen, ticket sellers and station agents. The domestic servant problem is a good illustration to the average man of how difficult it is to secure courtesy and willing effort. Let him imagine what his problem would be if he had lent his servants to some one else who had for two years both spoiled them and made them dissatisfied. This is the problem confronting the railroads, but the dining car service is small compared with the whole problem and the immediate loss of some additional money in this service can well be charged to gaining good will and be considered as money well spent.

Utilizing Resources to Best Advantage

In talking to the business paper editors in New York City last week, Samuel Gompers indicated that the shortening of the work day was a distinct advantage to industry because it forced the adoption of labor and time-saving facilities and methods. Railroad officers for many years have been faced with steadily increasing costs without corresponding increases in revenue and this has compelled them to look more or less closely into capacity and efficiency increasing equipment and practices. The roads generally are today unable to handle the traffic which is offered to them and production in many industries is restricted by the lack of transportation. It will be a slow and tedious process to improve the efficiency and productive capacity of the human element; there is no large amount of money available for new physical facilities, and if there were, it would in most cases be impossible to get sufficiently prompt delivery to promise any great amount of relief in the near future. The problem then resolves itself largely into using the available resources to the utmost in improving or modernizing the existing equipment and facilities. So great is the necessity that it would seem that all departments would be justified in putting their best men at work to concentrate their efforts toward devising ways and means of doing this to the best possible advantage. Steps might also well be taken by the American Railroad Association and its various sections to arrange for the pooling of the suggestions and experiences of the different roads in order that all of them could quickly be informed as to the important capacity-increasing developments on any one of the whole number.

Train Operation by Signal Indication

As a result of a careful study made to determine how best to handle heavy traffic over a stretch of single track, the Louisville & Nashville found that the rearrangement of the original signal system and the installation of a traffic locking scheme in connection with the automatic signals saved the expense of building an additional track, trestle and bridge over the Ohio river. The stretch of single track in question is approximately 4½ miles long between Evansville, Ind., and Henderson, Ky., and has 24 passenger and 22 freight trains scheduled a day in addition to a number of extra passenger and freight trains. One of the attractive features of the present method of operation is the fact that train orders have been dispensed with. Formerly, considerable time was lost by trains in waiting for orders governing their movements over this stretch of track; this delay has now been eliminated. A description of the results accomplished appears elsewhere in this issue and should be of value in helping to solve similar problems on other short stretches of congested single track. A study of the article will well illustrate the important possibilities of signaling, in relieving congestion and facilitating the handling of traffic in addition to saving large amounts which would otherwise have to be expended for other facilities.

Cotton Belt Refuses Guarantee

J. M. Herbert, president of the St. Louis Southwestern, refused to accept the guarantee of government rental for the current six months because he wished to spend about $1,000,000 more on maintenance during these six months than the administration would have spent on the program of maintenance carried out during the two years of government operation. The government's standards of maintenance called for about $2,000 a mile. The St. Louis Southwestern is planning to spend between $3,000 and $4,000 per mile. If the company had accepted the guarantee and had spent $3,500 a mile for maintenance of way, and had earned the full amount of the guarantee it might have had to pay over to the government the difference between $2,000 a mile and $3,500. As it is now if the company earns only its fixed charges it will lose $600,000 as compared with what it would have got by accepting the guarantee, but it will have charged to expenses $1,000,000 more than it could have charged to them in accordance with the provision of the Transportation Act, which limits maintenance to the same rate as under government operation and it will be $400,000 to the good. As a matter of fact, the St. Louis Southwestern is doing remarkably well. A strike such as that of the switchmen at St. Louis may upset all calculations, but barring some such catastrophe such as this, the prospects are that the road will earn considerably more than its guarantee even after having spent the additional $1,000,000 on maintenance. It took courage to refuse the guarantee. The company's risk is by no means theoretical. On the other hand, the decision is the result apparently of sound business judgment based however on hopes for the future rather than on immediate expediency. Competition in the Southwest is particularly keen. The St. Louis Southwestern had difficulties with the railroad administra-

tion during government operation and it is the opinion not only of the St. Louis Southwestern officers but of large shippers along its lines that the road did not get all of the traffic under government operation that it would have gotten under free competition. The only effective means of competition between railroads now is service. A railroad in poor physical condition cannot give service satisfactory to its patrons. The St. Louis Southwestern evidently intends to give this service even if it has to risk its own good money to do so. The decision of the company should and probably will have the approval of the shippers along its lines, and the reasons which lead to it are deserving of respect.

Strikes that Must be Fought to a Finish

THE AMERICAN PUBLIC has witnessed many struggles between the railroad companies and the railroad labor brotherhoods. Recently, it has been treated to the unusual spectacle of the companies and the brotherhoods fighting side by side to defeat sporadic strikes which have broken out in various parts of the country. Doubtless this spectacle has been regarded by many persons with wonder. The strikes are causing the public much inconvenience and loss. Doubtless many business men are impatient because the companies, instead of refusing to deal with the strikers, do not negotiate and make settlements with them.

The railroad brotherhoods and the companies are seeking to protect their own interests, but at the same time are acting in the interest of the public, and the public cannot promote its own welfare any better than by backing the brotherhoods and the companies in the struggle to the limit.

Some months before the new railroad law was passed the various classes of railway employees had presented to President Wilson and the Railroad Administration demands for advances in wages aggregating about $1,000,000,000. After the law was enacted committees representing the companies and the employees were appointed to negotiate regarding these proposed advances. The outcome was what might naturally have been expected. Any advance in wages made would have had to be added to the advance in rates which the railways must be given if they are to be put on their feet financially again—in other words, would have had to be paid by the public. No committee of railway officers could have been expected to assume the heavy responsibility of granting a large advance in wages which would be made directly and entirely at the expense of the public. On the other hand, no committee representing the employees could have been expected to accept, much less propose, as a settlement a wage advance much less than that which had been demanded. Consequently, as might have been anticipated, the two committees agreed to disagree, thus making a record on which, under the provisions of the new law, appeal lay to the Railroad Labor Board provided for by that measure.

The officers of the large railroad labor brotherhoods bitterly opposed the enactment of the labor provisions of the new law. Sometimes, however, their actions, like those of many other people, are wiser and more public-spirited than their utterances. Instead of calling a strike, they bowed with unexpectedly good grace to public sentiment, and prepared to present their case to the Railroad Labor Board.

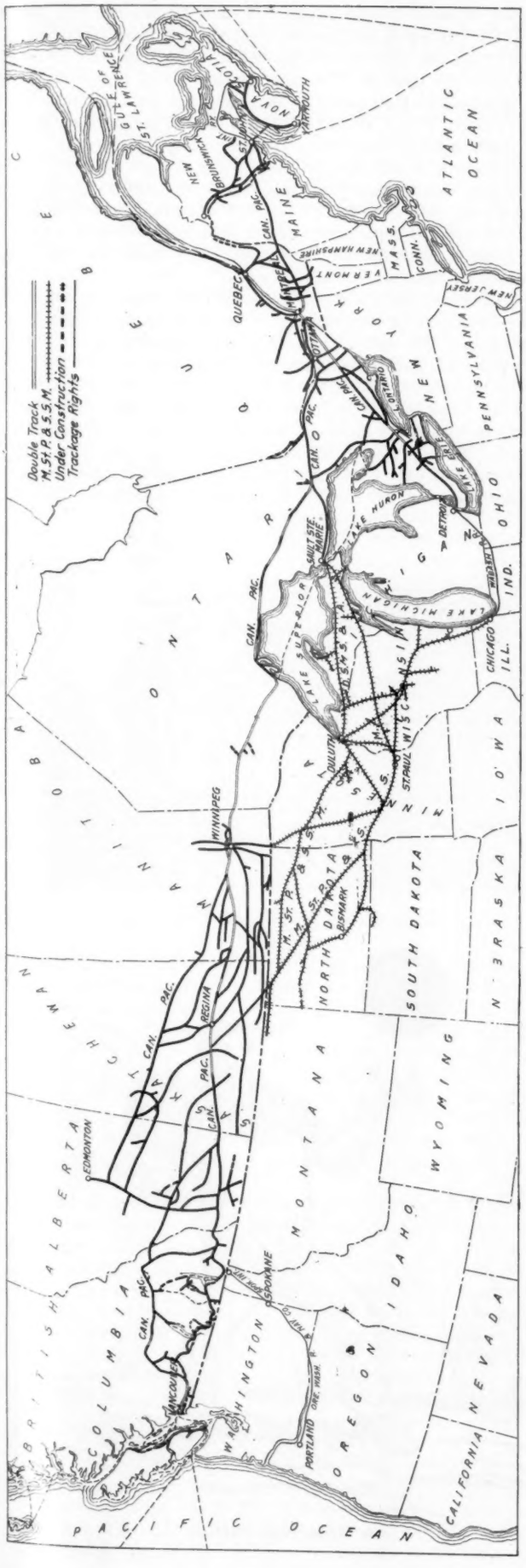
Unfortunately, President Wilson had not appointed the board. The President's failure to appoint the board seemed to mean further delay in getting some kind of a settlement. The railroad labor brotherhoods, like most other unions, contain an element of radicals who believe in "direct action," both as the best means of getting promptly from employers what the employees want now, as one of the best means of making the kind of industrial and social trouble which ultimately, as they think, will cause the complete overthrow of the present system of private ownership and management of property and the substitution for it of the soviet system. These radicals, as an aid to accomplishing both their present and their ultimate purposes, desire either to secure control of the existing labor organizations or to "smash" them and establish the "one big union." They welcome every opportunity to embarrass and harass labor leaders who are disposed to use peaceful means of accomplishing their end before resorting to strikes.

The situation presented when the wage negotiations between the committees of the railway companies and the labor organizations were terminated afforded the radicals a good chance to make trouble. It gave them an opportunity to say that the employees had waited long enough to have their wage demands settled; that they had been tricked first by President Wilson and then by the railroad companies, that the old labor organizations and their leaders had shown incapacity for dealing with the situation, and that the only way the employees could promptly get what they were entitled to was by breaking away from the old organizations and going on strike. With the spirit of unrest prevailing among all classes of labor, including those employed on the railways, this kind of talk was bound, under the conditions, to cause some trouble. It first caused a strike of switching crews in the yards in Chicago and then similar outbreaks in other parts of the country.

The leaders of the large labor brotherhoods have been put in a difficult position by these developments. They have been working steadily for years to enlarge the scope of labor movements until there should be established practically uniform wages and conditions of employment throughout the country; and, finally, under government operation they achieved almost complete success. Their organizations have contracts with the various railways. The strikes which have occurred, being participated in by members of the organizations, are in direct violation of these contracts. The railway companies are put in a position to say that there is no use in making contracts with organizations which cannot carry them out, and to demand that the brotherhoods shall help them fight and win the strikes both as a matter of good faith and to show that it is worth while to make contracts with the brotherhoods. The brotherhoods have a strong incentive to fight the strikes, not only in the fact that they endanger their contract relations with the railways, but also in the fact that any success the strikers might have in getting concessions from the railways which the brotherhoods have been unable to get would tend to discredit and disrupt the brotherhoods and nullify what the brotherhood leaders have accomplished in getting the relations and dealings of their organizations with the railways on a nation-wide basis.

Altogether aside from the interference with transportation service they have caused, the strikes have also presented some serious difficulties to the railway companies. They can not well negotiate with the strikers, first, because in most cases the strikers are unorganized mobs, and, secondly, because the railways have contracts with the brotherhoods, and therefore any recognition of the strikers by the railways, through negotiations or otherwise, probably would soon embroil them with the brotherhoods.

In the background, also, are the demands for $1,000,000,000 in advances in wages, which railway employees, as a whole, are making. If the wage demands of the striking employees of any particular class in any particular part of the country should be granted it would at once become necessary, on pain of strikes elsewhere, to make similar advances to all other employees of the same class throughout the country. But there are well-recognized relationships between the wages of different classes of railway employees, and if, except under the mandate of some authoritative body, such as the Rail-



The Canadian Pacific and Its Controlled Line, the Minneapolis, St. Paul & Sault Ste. Marie

road Labor Board, an advance in wages should be given to one class of employees throughout the country corresponding advances would have to be given at once to other classes throughout the country or there would be strikes by them. It is no exaggeration, therefore, to say that if, in order to end the strike at Chicago, for example, the railways should grant the advances in wages which are being demanded by the striking switchmen there, they would make a change in the adjustment of wages which probably would soon either force them to grant the entire billion dollar advance now being demanded without any hearings before the Railroad Labor Board or to fight a general strike.

The public certainly does not want a billion dollar wage advance granted without full hearings and an intelligent determination of the issues involved by an impartial public authority. This would defeat the entire spirit and purpose of the labor provisions of the new railroad law. And the public certainly does not want a general railroad strike. Therefore, as we have said, the public should back the railways and the brotherhoods to the limit in fighting the strikes now occurring. Whatever may have been their relations and conduct in the past, whatever may be their present motives, both the labor brotherhoods and the companies are struggling to get the wage controversies now pending settled peacefully and in accordance with the requirements of the law. The strikers are trying to get what they want by force, regardless of the merits of their demands, of the provisions of law and of the rights and welfare of the public. It is vitally important to the public peace and welfare that in the first great controversy to arise between the railways and their employees since the resumption of private ownership there shall be set the precedent of a settlement reached peacefully, intelligently and in the manner prescribed by law. Otherwise, the labor provisions of the new railroad law will become a dead letter, and we shall probably enter a new era of constant threats of strikes on the railroads, frequently resulting in disturbances far worse than those we are passing through now.

Canadian Pacific

UNDER ANY SYSTEM of rates which will permit the Canadian National Railways to earn even 3 per cent or 4 per cent on the capital invested by the government, the Canadian Pacific can continue to operate profitably. The history of any American railroad can usually be divided into three periods. The first is when the road is in advance of population and industrial development. During this period overhead charges and the cost of rendering passenger service, as yet unprofitable, tend to preclude the possibility of prosperity. Most of the railroads in the United States went through bankruptcies and reorganizations before they emerged from this period. The second is the period of what might be called increasing returns. Traffic on main lines is heavy enough to give full tonnage freight trains and well-filled passenger trains and a large proportion of branch line mileage earns at least operating expenses. As traffic grows, the railroad can save a considerable proportion of the increase in gross earnings. The third period is when traffic has increased to such an extent that all classes of facilities are overtaxed. It is no longer possible to add passing tracks in large yards, or to take care of additional business economically by shortening block sections. This is the period of decreasing returns. The Canadian Pacific is still in the second period. Most of the large railroads in eastern United States are in the third period.

The Canadian Pacific in 1919 earned more than ever before in its history. It did not do as large a freight business as in either 1918 or 1917, but there was considerable increase in passenger business. The average earnings per ton per

mile on freight, however, amounted to one cent in 1919, as against 0.85 cent in 1918 and 0.70 cent in 1917. The total number of tons of freight carried in 1919 was 25,103,000, as against 29,857,000 in 1918 and 31,199,000 in 1917. The total ton mileage handled in 1919 was 11,121,000,000; in 1918, 13,015,000,000; in 1917, 14,883,000,000.

Total operating revenue, including that from sleeping cars and express, was $176,929,000. This was an increase of $19,391,000 over 1918. Operating expenses, including sleeping car and express expenses, amount to $143,996,000, an increase of $20,961,000. After paying fixed charges and making an appropriation of $500,000 toward the pension fund, the Canadian Pacific had $22,272,000 available for dividends from the railroad and sleeping car earnings. In addition, there was $23,214,000 income from investments, ocean steamships, commercial telegraph, etc. The regular 4 per cent dividends were paid on the preferred stock and 10 per cent on the common stock, calling for $3,227,000 and $26,000,000, leaving a balance of approximately $15,000,000.

President Beatty said in his report to the stockholders, "Your directors cannot hold out any hope of substantial relief for some time to come from these high costs which are reflected so strongly in the operating expenses of the company, but every effort is being made to offset the effect on your revenues by economy in operation and extension of the company's freight and passenger business. It is not to be expected, however, that any normal increase in business can possibly equal the extraordinary increase in wage and other costs, which all railway companies have experienced during the past two years."

The Canadian Pacific has passed through a more trying time insofar as shortage of men is concerned, than have the roads in the United States. It did not have the added burden of two years' government operation, but it caught the reflex of this condition in the United States. The present Canadian wage scale is known as the "McAdoo scale." Both the Canadian government railways and the Canadian Pacific were forced to follow increases in wages made in the United States. They also followed increases in freight and passenger rates and if the Interstate Commerce Commission allows an increase in this country, the Canadian government will be likely to also authorize the government railways and the Canadian Pacific to make similar increases. If it does not, the Canadian government railways are going to have a hard time to earn anything substantial above bare operating expenses, not to mention the great interest on the money that has built them. The Canadian Pacific is apparently safe, even if the Canadian government should not allow an increase in freight rates. The Canadian Pacific has a better chance than most of the railroads in the United States to make economies in operation through obtaining more efficient work from its employees. Canadian railway labor has not been demoralized by the wage advances that it received. The bitterness of the struggle for existence in the war was felt more keenly by Canadians, and especially by Canadian workingmen, than it was in the United States. There is a chance for the Canadian Pacific management to treat with its employees as reasoning human beings who are citizens before they are members of a class. This is not to imply that there is no chance of this in the United States, but simply to hazard the opinion that radical class feeling has not gone so far among Canadian railway employees as among United States railway employees.

With the increase in traffic on the Canadian Pacific there will not be the unbearable pressure on transportation facilities that there is on a road like the Pennsylvania or the Baltimore & Ohio. The total ton mileage of revenue freight per mile or road on the Canadian Pacific was only 840,928 in 1919, comparing with 991,680 in 1918.

There was a falling off in train loading in 1919, the average for revenue freight being 498 tons, as against 530 tons in 1918. In part this is due to a smaller loading per car, the average for revenue freight being 22.08 tons in 1919, as against 22.90 tons in 1918, a decrease of 7.62 per cent On the other hand traffic was better balanced in 1919 than in 1918; there was a decrease in loaded car mileage of 8.22 per cent and in empty car mileage of 14.33 per cent. In 1919, there were 494,862,000 loaded car miles with 170,620,000 empty car miles, while in 1918 there were 539,157,000 loaded car miles and 199,157,000 empty. Probably the reaction after the patriotic efforts which were made to get the greatest possible loading of cars is responsible for the decrease in tons per loaded car mile.

In handling the passenger business, the Canadian Pacific made considerable economies. The number of passengers carried in 1919 was 15,672,000, an increase over 1918 of 8.86 per cent, and the average passenger journey was 112.53 miles, as against 88.95 miles in 1918; thus there was an increase in passenger mileage of 37.72 per cent. This increase of passenger mileage was handled with an increase of only 26.46 per cent in total passenger car mileage, and an increase of only 22.47 per cent in passenger train mileage.

The following table shows the principal figures for operation in 1919 as compared with 1918:

	1919	1918
Mileage operated	13,389	13,389
Freight revenue	$111,064,442	$110,187,288
Passenger revenue	46,182,151	30,837,254
Total operating revenue	176,929,060	157,537,698
Maintenance of way expenses	28,912,220	22,646,106
Maintenance of equipment expenses	33,897,728	28,226,991
Traffic expenses	3,829,687	3,001,579
Transportation expenses	68,054,175	61,047,813
General expenses	6,105,783	5,421,601
Total operating expenses	143,996,024	123,035,310
Net operating income	32,933,036	34,502,388
Interest, including debenture charges	10,161,510	10,177,513
*Railroad income available for dividends	22,271,527	23,630,898
Other income	9,049,342	8,128,752
Net corporate income	31,320,869	31,759,650
Dividends	29,227,276	29,227,276
Surplus	2,093,593	2,532,374

*The net from commercial telegraph and Atlantic steamship lines is deducted before arriving at this figure, and is included in the other income in the next item.

From the N. Y. World

A Dangerous Pastime

Transportation Tied Up by Unauthorized Strikes

New York Suburban Traffic Almost Paralyzed; Severe Freight Congestion for a Whole Week

THE LABOR TROUBLES which originated in the walkout of the switchmen in the Chicago district, beginning April 1, spread to New York City on Thursday, April 9, and in a few days have resulted in an almost complete tie-up of freight service, a crippling of passenger service on some roads and a complete suspension of commuter service on others. Railroad switchmen, members of the Brotherhood of Railway Trainmen and Switchmen's Union of North America went out Thursday evening against the authority of their organizations and practically without notice in the yards of the Erie, Pennsylvania, Lehigh Valley, Lackawanna and Central of New Jersey in Jersey City and Weehawken. By Saturday the disaffection had begun to extend to the firemen, not only helping further to tie-up the freight traffic but resulting in complete suspension of suburban passenger service on the Erie Saturday morning, on the Lackawanna Sunday morning and

Freight Piled Up at a West Shore Station

on the Central of New Jersey Monday afternoon and evening. The difficulties have also affected the Pennsylvania and the New Haven, resulting in a tie-up of freight service as on the other roads and also temporary suspensions of passenger service and the cancellation of many local and through runs. The New Haven on Monday was compelled to abandon parlor and sleeping car service on its trains between New York and Boston. The West Shore and New York Central have had their freight and passenger service affected, but in the case of the latter not to as great an extent as on the other roads mentioned.

The roads which operate ferry and lighter service in New York harbor and which have been combating a strike of their boat crews since April 1 have thus far been able to put only a few of their tugs back in service. With the exception of the Lackawanna, whose ferries have not been affected by the difficulty, they have been able to restore a considerable portion of their ferry service with the aid of strikebreakers. This luckily happened in time to compensate for a walk-out of the crews Saturday morning on the Hudson & Manhattan, causing a complete suspension of service on its rapid transit line to Newark, N. J., and the tubes under the Hudson river.

Reason for the Strike

The outstanding feature of the walkout of the switchmen and firemen is the fact that it has occurred in most cases without notice and without the presentation of any demands for increased wages or improved conditions or without such presentation at least until the strike was under way. Unlike the situation in the Chicago district, where John Granau, as the organizer and president of the Chicago Yardmen's Association, has been the leader, in New York there have been no names of leaders mentioned and apparently no organization has been perfected to carry out the strike. In some cases the men have walked out by twos and threes. In others there have been meetings of the men and concerted action has been agreed upon as to the steps to be taken. In but few cases have there been threats of violence. The men have complained personally of what they term the dilatory action of their brotherhood leaders and that they are tired of receiving only promises instead of increases in wages. In all cases the action taken has been as much directed at the brotherhood organizations as at the railroads or the public. The brotherhood officers have issued statements emphasizing this fact and that they are absolutely opposed to the strike. Officers of the Brotherhood of Railway Trainmen and of the Switchmen's Union have been trying to get the strikers to return, but without success. Timothy Shea, first vice-president of the Brotherhood of Locomotive Firemen and Enginemen, tried to argue the matter with a crowd of 1,500 men at Odd Fellows' Hall in Jersey City on Monday, but could not make himself heard above the din that accompanied his attempts to speak.

The officers of the four brotherhoods have put themselves

A Meeting Place of the Outlaws in Jersey City

on record in the following statement issued from Cleveland on April 9:

> The present strike of men engaged in switching service was originated in Chicago by a new organization that has for its purpose the destruction of the Brotherhood of Railroad Trainmen and the Switchmen's Union, and in its inception had nothing to do with the wage question, but was a demand for the reinstatement of the leader of this opposition organization.
>
> After this strike was instituted for this purpose the leaders of the new organization then injected the wage question for the sole purpose of deceiving the yardmen throughout the United States and to promote the "One Big Union" idea.
>
> There can be no settlement of pending wage questions while this illegal action continues. We insist that every

member of these brotherhoods do everything within their power to preserve their existing contracts, which if abrogated may take years to rebuild. The laws of all of these organizations provide penalties for members engaging in illegal strikes, and these penalties will be enforced.

The statement is signed by L. E. Sheppard, president of the Order of Railroad Conductors; W. G. Lee, president, Brotherhood of Raliroad Trainmen; W. S. Stone, grand chief engineer, Brotherhood of Locomotive Engineers, and W. S. Carter, president, Brotherhood of Locomotive Firemen and Engineers.

The statement in this communication was further amplified by letters to W. W. Atterbury, vice-president of the Pennsylvania Railroad. Mr. Atterbury wrote as follows to the brotherhood heads:

I find that the strongest propaganda that is influencing our men, particularly the younger men, is the word that is being passed around that this movement has the support of you gentlemen and the organizations you represent, but that, in view of the fear of injunction being served on you and your organizations, the strike is being engineered by word of mouth and that no regular orders have been issued or are to be expected.

Of course, I am not in a position to know what you have already done, but I cannot help but feel that your position is not understood by all your members locally, and therefore, for your own sake and the sake of the organizations you represent, my suggestion is that you declare your position, through your regular channels, to the local chairmen in no uncertain terms.

Warren S. Stone, president of the Brotherhood of Locomotive Trainmen, replied on Monday:

There is no truth in the report that present strike movement has our support. Everything possible is being done to have our members remain at work and carry out their contracts. There are no secret instructions to the contrary being issued. Any such statements being circulated among the men are absolutely untrue. In order that there may be no mistake regarding our position I am today issuing a circular letter to all divisions.

The Strikers' Demands

The statement is made above that the walkout of the men occurred without the presentation of wage demands before the walkout occurred. These demands were, however, formulated later and were announced following a meeting of the outlaws on Sunday to be as follows:

Automobiles and Trucks Were Barred from Ferries During Rush Hours

We are all railroad men affiliated with various organizations and orders to better our conditions. We have called the meetings that we have been holding to further strengthen ourselves, and we have decided to be known hereafter as the United Railroad Workers of America. Our officers have been elected, and they have drawn up demands which will be presented to the proper officials for consideration. We do not want our name to be misunderstood as representing the national organization. We still belong to our present railroad body, but if the general organization does not uphold us in this strike we shall continue our activities under our adopted name.

We want it emphasized that the men who have attended our meetings are affiliated with one or more of the four big organizations.

All officers and members, you can say, are satisfied with the progress we have made so far, and also we have caused no trouble outside of leaving our posts, and we intend to conduct ourselves in the same manner in the future. Here are the demands that we intend to present to the railroad officials:

Conductors, $1.10 an hour. Brakemen, 95 cents an hour.
Eight hours or less to constitute a day's work.
Time and a half for overtime.
Time and a half for Sundays and holidays.
Double time for overtime on Sundays and holidays.
Switch tenders to receive the same wages and hours as brakemen.
Yardmaster, $325 for general yardmaster, $295 a month for yardmaster, one day off in each seven, with pay; two weeks off a year and pay; eight hours to constitute a day's wages; seniority to prevail.

Jersey Commuters Jam the Trolleys

Firemen, $8.20 for two freight services, $7.20 a day for yard firemen, $7.50 a day for passenger firemen, $8.20 a day for outside hostlers, $7.20 a day for inside hostlers, $6.75 a day for hostlers' helpers, $1 a day to be added to all freight rates.

Engineers, $1.35 an hour for yard service; $1.50 an hour for road engineers; $12 a day, eight hours or less. Eighty miles or less constitute a day for freight engineers; $1.50 an hour for passenger engineers, or $12 a day, eight hours or less; eighty miles or less on short "turnabouts," $1.10 an hour, or $8.80 a day.

For conductors in suburban service, 97 cents an hour, or $7.76 a day; for collectors, 82 cents an hour; for baggagemen, 90 cents an hour, or $7.20 for baggage men who handle dynamos or express; 80 cents an hour for brakemen in suburban service; $6 a day for 80 miles or less for conductors on through service; $4.50 a day for brakemen on through service; $4.75 a day for baggage men; $4.75 a day for passenger service men on through service; $9.20 a day for freight conductors, local or through service; $7.60 a day for freight flagmen, local or through service. In road service 80 miles or less, eight hours or less constitute a day's work.

We will ask for back pay from June 1, 1919, on the difference in wages and the new scale.

These demands were further amplified following a meeting on Tuesday by a statement reading as follows:

In determining the justness and reasonableness of such salaries so far as applicable we have taken into consideration, among other relevant circumstances, the following:

1. The scale of wages paid for similar work in other industries.
2. The relation between wages and the cost of living.
3. The hazard of employment.
4. Training and skill required.
5. The degree of responsibility.
6. The character and regularity of employment.
7. Inequalities of increase in wages or of treatment, the result of previous wage orders or adjustment.

We further demand the guarantee of twenty-six working days for all assigned men. We further demand that the system of physical examination be abolished after applicants

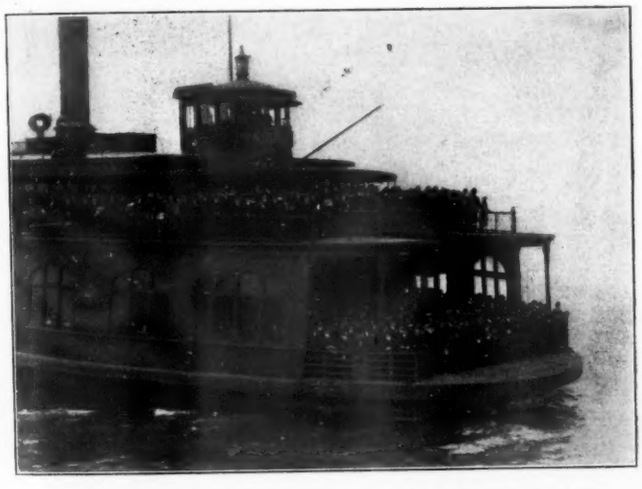
have passed a preliminary examination. Any employee who fails to pass the prescribed color test shall be given a field test and if he fails to pass the field test he shall be retained in the service in any capacity that his physical condition will enable him to perform and at the same rate of pay that applicant received in his former position.

At these and other meetings the strikers finally declared that they were not fighting the brotherhood, although they did express the opinion that the brotherhood officers had not done as much for them as they should have done. One of the significant features of the situation is that the name adopted at first — United Railway Workers of America — was later changed to United Brotherhoods of America, which some take to be a new version of the one big union idea.

At the meeting on Tuesday the strikers reaffirmed their determination to stay out until their demands should be granted. They discussed, however, the matter of handling milk and foodstuffs and decided to continue to move trains carrying the former and to consider further their action as to supplying New York with its necessary food supply.

Embargoes on Freight

The nearly absolute cessation of freight service resulted in complete embargoes being placed on all freight from or destined to New York. Milk was being moved in fairly good shape, this being because the New York Central was able to bring in nearly its entire supply, because considerable of the



Rush Hour on the Ferryboats in New York Harbor

supply was coming in on motor trucks and also because the strikers in most cases made an exception in the case of this commodity. Of foodstuffs practically none was being carried on the railroads with terminals in New Jersey.

On Thursday morning the freight situation was reported generally improving and complaints by city authorities and others of impending starvation were mostly silenced; but there was still great congestion in all of the large freight yards around New York, the difficulties extending many miles out, in all directions. Switching crews at the principal yards of the Pennsylvania on the New Jersey side of the Hudson River had resumed work. The New York Central which, throughout the strike, has kept freight moving in a more nearly normal way than any of the other roads, reported continued improvement. On the New York, New Haven & Hartford, the freight situation was still acute and there was difficulty in keeping up the locomotive fuel supply. The Lehigh Valley reported freight moving in considerable volume, and the switchmen in the large yards of this road at Hazleton, Sayre, and Wilkes-Barre, at a meeting on Wednesday, voted to remain loyal to the company. On the same day the men at the Potomac yards, Alexandria, Va., and at West Albany, on the New York Central, returned to work.

Passenger Service

The chief difficulty in the matter of passenger service was in the suburban traffic. Most of the roads were operating their through trains, although with some difficulty and delays. On the New Haven a number of through trains had to be cancelled, and for a period there were no parlor, sleeping or dining cars. The Pennsylvania passenger service has been erratic, several trains having been cancelled and there having been a partial suspension of service in other ways. The situation on this road was further complicated by a walkout of the shopmen at the Meadows shops on the New Jersey meadows and at Trenton, N. J. The stiuation on Wednesday morning was characterized by the expression, "Road paralyzed east of Harrisburg, Pa.," but later in the day the road was able to run a number of trains.

The commuters on all the roads in New Jersey have been greatly inconvenienced not only by the lack of trains but by the shutting down of the Hudson & Manhattan and the labor difficulties on the ferries which have not been sufficiently overcome as yet to permit of normal service, let alone of extra service required. The trolley lines in New Jersey adjacent to New York have been almost overwhelmed, and so many commuters have staid in New York overnight that they have almost swamped the hotels. The result has been the calling of indignation meetings in a number of suburban communities and prominent citizens have volunteered to man trains. This has happened notably on the Erie and Lackawanna. In addition to that, the roads have received offers from students at Stevens Institute of Technology and at Princeton University to man trains. In numerous cases the roads have utilized the services of men on their pension rolls who have offered their services; and the services of loyal conductors and enginemen have been supplemented by those of officers.

The passenger-train situation on the roads out of New York up to Wednesday was as follows:

Long Island.—Electric service only 85 per cent normal. Only one train a day on each division of the lines operating by steam.

Central of New Jersey.—The firemen left their work as they arrived at Jersey City Monday morning. The officers induced some of them to come back to run some of the commuter trains out Monday afternoon and evening, but on Tuesday the suspension of service was complete. On Wednesday, however, the road managed to bring in about 24 commuter trains to its terminal at Jersey City.

Erie.—The firemen on this road walked out, so that there was no commuter service on Saturday at all. A number of through trains were abandoned at Port Jervis, the passengers being carried to Jersey City only with difficulty and many hours late. By Wednesday the service was crippled from Susquehanna, Pa., eastward. Commuters in several of the centers adjacent to New York held indignation meetings, at which rather uncomplimentary remarks were made concerning the strikers, and business men volunteered their services to help bring trains into Jersey City. On Tuesday three such trains were operated, and on Wednesday a number additional. Richard Sanderson, representative of the Baldwin Locomotive Works at New York, served as fireman on one of these trains on the Greenwood Lake division. Mr. Sanderson is a resident of Montclair Heights, on that division.

Delaware, Lackawanna & Western.—The Lackawanna's walkout occurred Sunday morning, since which time there has been no regular commuter service. Numbers of residents of the towns in the Lackawanna's suburban area offered themselves as volunteers. On Monday the 8:20 express from Morristown was run with two volunteer firemen, one of the two being John W. Stedman, vice-president of the Prudential Life Insurance Company. On Wednesday the number of volunteers was sufficient to permit of running nine trains, including two from Morristown, three from South Orange,

one from Gladstone, one from Dover and two from Montclair. Volunteers from the ranks of the commuters, in several cases chosen at mass meetings of the commuters, students of Stevens Institute of Technology, officers of the company and loyal employees were all called upon to fill up the quota of the crews. The through trains were all running and all practically on time.

Lehigh Valley.—This road does not operate much commuter service. The through trains were running off schedule and trains from Pennsylvania station, New York, were annulled.

New York Central.—Passenger service nearly normal.

West Shore.—Passenger service nearly normal.

Baltimore & Ohio.—Passenger service from Pennsylvania station partly suspended. Staten Island Rapid Transit completely suspended.

Hudson & Manhattan.—Idle since Saturday. New crews were being trained, but no passengers carried.

New York, New Haven & Hartford.—As noted above, the New Haven was compelled to annul several trains on Monday, including the Merchants Limited, and to abandon sleeping, dining and parlor-car service. On Wednesday the service of both local and through trains was reported as 90 per cent normal.

Pennsylvania.—Reference to the situation on the Pennsylvania is made above. Note should also be made of the fact that the Pennsylvania has accepted the offer of a considerable number of Princeton students to man its trains.

Situation in Other Cities

The walkout, in addition to hitting the Chicago and New York districts, also affected other sections. The strike of the railroad men in the Pittsburgh district was reported on Tuesday to have thrown some 200,000 men out of work; in the Detroit district something like 110,000, and similar inconvenience is reported in other indusrtial centers. New England was not affected, except by the failure to receive freight from connecting lines to the west.

The yardmen employed in the Washington terminals and at the Southern railway's Potomac yard voted to return to work at a meeting on Tuesday evening, at which it was decided to await the findings of the Railroad Labor Board as to the wage demands and the crews scheduled for duty at 10:30 in the evening reported at that time.

Chicago Strike Losing Its Effectiveness

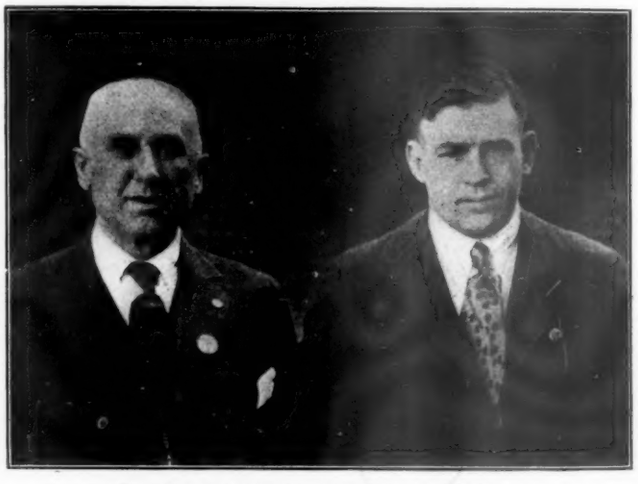
At the present time, however, the Chicago strike is gradually losing its effectiveness. It is being defeated by the combined efforts of, (1) the members and officers of the two regular switchmen's unions, who have been doing missionary work among the strikers in addition to inducing many members of the two organizations located at points outside Chicago to fill the places left vacant by the strikers; (2), the railway executives and employees who have to a large measure jumped into the breech and, by taking the strikers' places in the yards, have kept freight and passenger traffic moving; and (3), the loyal members of the brotherhoods who have refused to participate in the strike. Daily statements, issued on behalf of the railroads involved, show that substantial progress is being made each day in the number of switch engines in operation and in the amount of live stock, coal and other commodities handled, both in and outbound, and it is expected that the effects of the tieup will have been overcome in a short time.

The result of the failure of the Chicago strike will undoubtedly be the subsidance of the strike fever at other points. Already this tendency has been noted in some places. Several groups of men, spurred on by the apparent success of the Chicago strike have returned to their work. This is true at Battle Creek, Mich., Ft. Worth, Texas, Kansas City, Mo., Akron, Ohio, Ft. Wayne, Ind., Los Angeles, Cal., Kent, Ohio, Saginaw, Mich., Kankakee, Ill., Bloomington, Ill., Du Quoin, Ill., Dayton, Ohio, and Willard. As the failure of the Chicago strike becomes more and more apparent the insurgents at other points are also reconsidering their action and returning to work. When the final collapse of the movement is apparent, it is not unduly optimistic to expect that the situation throughout the country will clear rapidly.

The story of the Chicago strike, because of its varied developments and angles, can best be told in chronological order. The developments, therefore, up to the present time are briefly as follows:

Thursday, April 1.—The strike of switchmen and switchtenders in the Chicago district originated on the Chicago, Milwaukee & St. Paul, following the removal of John Grunau, organizer and president of the Chicago Yardmen's Association, as a yard conductor. Approximately 700 members of this organization, which at that time was approximately three months old, presented the removal of Grunau as their main grievance, however, at the same time they filed demands for increased pay as reported in the *Railway Age* of April 9 (page 1145). Grunau, a yard conductor on an employee train running between Chicago and Bentonville, Ill., was displaced by a road conductor in accordance with the contract with the Brotherhood of Railroad Trainmen, when a revenue car was placed on the train.

With the announcement of the strike, A. F. Whitney, vice-president of the Brotherhood of Railroad Trainmen, immediately announced that the move was unauthorized and illegal and that steps would be taken by the brotherhood to combat its effects. This opposition on the part of the officers of the regular brotherhoods has been continued throughout the strike and has been instrumental in depriving the walkout of its effectiveness.



Leaders of Outlaw Strikers at Chicago

Left to right—John Grunau, President and Organizer, and James S. O'Gara, Organizer of the Chicago Yardmen's Association

Friday, April 2.—The number of men on strike the second day of the movement did not materially increase although many local organizations were contemplating action. The situation was featured mainly by attempts on the part of officers of the Brotherhood of Railroad Trainmen to speak before meetings of members of that organization. These meetings were repeatedly broken up by the striking switchmen. The walkout at this time had not caused serious inconvenience to transportation either freight or passenger.

Saturday, April 3.—The members of the Chicago Yardmen's Association had by this time outlined their demands and stated that if they were not granted within 48 hours, a general walkout of practically all of the switchmen and switch tenders employed in the Chicago district would ensue. Although the strike up to this time had tied up freight service on the St. Paul it had not had a serious effect on transportation in the Chicago switching district.

Sunday, April 4.—The strike of the employees of the St. Paul was abetted on April 4 by both the Easter Sunday blizzard and by the extension of the strike to the Chicago Junction, the Illinois Central and the Chicago & North Western. Insofar as tying up transportation is concerned, the blizzard alone would have accomplished this regardless of the strike. The strikers were ordered back to work in a statement signed

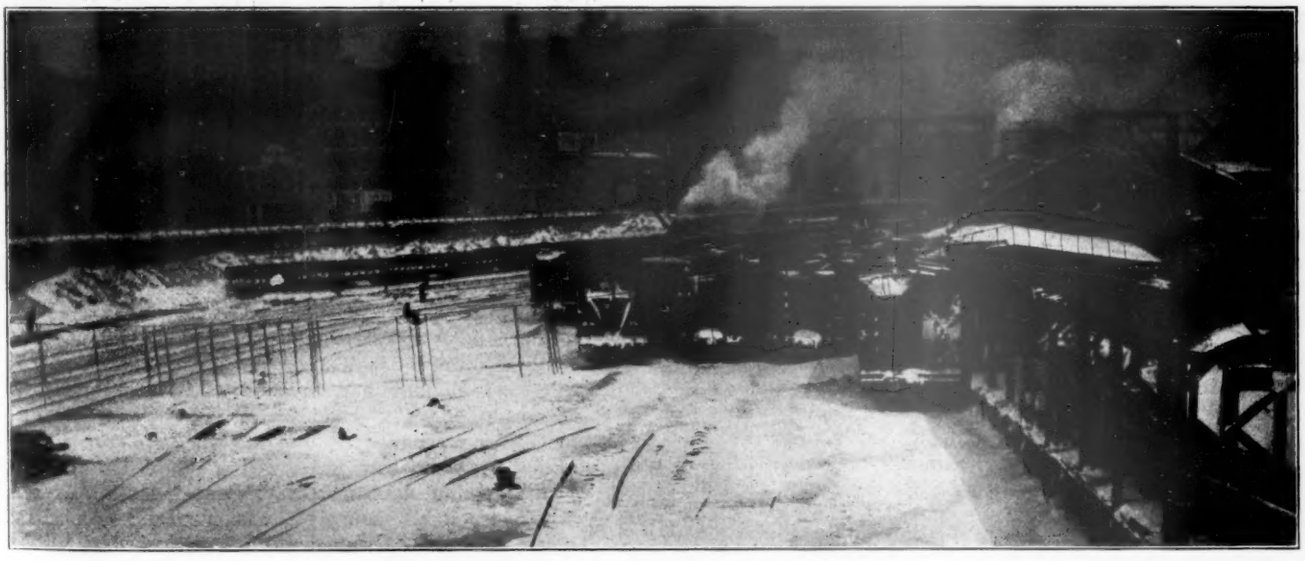
Parcel Post Mail Piled Up in Front of Chicago Post Office

by Mr. Whitney and H. G. Gallagher, general chairman of the Brotherhood of Railroad Trainmen, for the St. Paul, and at the same time the brotherhood officers sent out a call for members of their organization to come to Chicago to take the place of the men who had left. The strike of the switchmen on the Chicago Junction immediately crippled operation at the Chicago stockyards.

Monday, April 5.—This was the crucial day of the strike insofar as paralysis of transportation was concerned. Traffic in general in the Chicago switching district was demoralized, notwithstanding the fact that a large number of members of the Brotherhood of Railroad Trainmen and the Switchmen's Union of North America had been brought to Chicago to fill the places of the strikers and the fact that many executives and employees of the railroads had jumped into the breech and were acting as switchmen and switch tenders in the affected yards. At this time officers of the Chicago Yardmen's Association announced that 16,000 yardmen had quit work in the Chicago switching district, while brotherhood officers and the railway executives stated that the strikers did not number more than 2,700. Indicative of the manner in which the strike was being fought by the brotherhoods is the fact that on the Chicago & North Western 150 recruits from terminals outside of Chicago were assembled at Chicago. Similarly 110 men were brought to Chicago on the St. Paul. By this time also the strike on the Chicago Junction had seriously crippled production at the stockyards and more than 10,000 employees had been laid off by the packing houses. At the same time an ultimatum was issued to members of the Brotherhood of Railroad Trainmen setting forth that the walkout had its origin in a personal grievance of John Grunau against the St. Paul and pointing out the fallacy of strike action at the present time. This ultimatum was signed by 23 brotherhood officers, embracing 20 chairmen of general committees on the affected roads and Vice-presidents Whitney, Farquharson, and Bannon. At this time the general situation in Chicago was described by the General Manager's Association of Chicago as follows:

"Sixty per cent of the engines in Chicago are out of service, caused by an outlaw organization presenting demands for an increase in rates of pay which could not be considered by the railroads. The Brotherhood of Railroad Trainmen and the Switchmen's Union of North America had presented demands together with all crafts, which are being handled by the Wage Conference at Washington and must, under the Transportation Act, be concluded before the Labor Board—yet to be appointed by the President. All railroads at Chicago have contracts covering yard rates and conditions for switchmen and switch tenders with either the Brotherhood of Railroad Trainmen or the Switchmen's Union of North America. Railroads have called on the officers of these organizations to live up to and carry out these contracts which the organizations have agreed to do until such time as the wage question now being handled under the Transportation Act is disposed of by the Labor Board."

During the day the strike spread to other lines in the Chicago district. The situation in general was outlined as follows: all of the switching force on the New York Central, the Elgin, Joliet & Eastern, the Chicago, Rock Island & Pacific, the Pennsylvania (Ft. Wayne division), the Michigan Central, the Minneapolis, St. Paul & Sault Ste Marie, and the Chicago, Indianapolis & Louisville remained at work. Roadmen, members of the Brotherhood of Railroad Trainmen, and the Switchmen's Union of North America were responding to the appeal of their leaders in Chicago and as a result the Chicago, Burlington & Quincy, the St. Paul, the Chicago & Northwestern, and the Illinois Central were gradually replenishing their crews. Some of the men on the Belt Railway of Chicago, the Chicago & Alton, the Erie, the At-



A Blizzard Adds to the Congestion in Chicago

chison, Topeka & Santa Fe, the Indiana Harbor Belt and the New York, Chicago & St. Louis did not leave their work. On the roads on which all of the switching force walked out, i.e., the Wabash, the Chicago & Eastern Indiana, the Baltimore & Ohio, the Grand Trunk and the Chicago Great Western the condition was unchanged.

Tuesday, April 6. By this time Chicago had begun to feel the effects of the unauthorized strike and strenuous efforts were made during the day to bring union switchmen to Chicago from outside points and to clear the freight yards of the accumulation. The shipment of perishables to Chicago began to be greatly hampered and despite the fact that the railroads involved were operating at approximately 40 per cent of their normal efficiency, alarmist reports began to be spread concerning the endangering of the city's food and coal supply.

Efforts of the brotherhood officers to bring in members of their organizations did not meet with a generous response, although approximately 400 men were induced to aid in relieving the traffic jam resulting from the strike. This serious congestion in the Chicago yards led to the placing of embargoes by many of the roads involved, although these embargoes were in many cases not extensive.

The situation at the Chicago stockyards began to be even more acute and, according to O. T. Henkle, general manager of the Union Stock Yards Company, only 200 to 300 cars of cattle had been received during the day, as compared with the usual supply of between 1,800 and 2,000 cars. This situation can not be entirely attributed to the strike, however, for shippers were reluctant to ship their cattle because of the severe weather and the consequent danger of loss.

Congestion in the Chicago yards was partially relieved by routing through freight trains east and west via other points.

According to the General Managers' Association of Chicago all the railroads were working as many switch engines at Chicago on this day and some, notably the Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago, Burlington & Quincy, the Elgin, Joliet & Eastern, the Illinois Central, the New York Central and the Minneapolis, St. Paul & Sault Ste. Marie, were working more than at any time since the strike began.

Wednesday, April 7. On this day the paralysis of transportation was practically at its height due to a combination of several conditions. The apex in the number of men on strike had been reached, freight had been piled up in the yards until extensive movement and improvement was impossible and officers of the regular brotherhoods were having some difficulty in inducing men to take the place of the strikers in the Chicago district. From this time on, however, the conditions gradually began to improve as will be noted.

Thursday, April 8. On this day the railroads in Chicago were handling between 40 and 50 per cent of normal freight traffic with the aid of loyal employees, union men imported from other divisions and executives and employees pressed into service as switchtenders and switchmen. At this time sufficient crews to operate approximately 300 switching locomotives had been rceruited in the Chicago area, according to the General Managers' Association of Chicago, as compared with the normal number of approximately 700.

One of the developments on this day of the strike was the formation of a new "outlaw" organization, the United Enginemens' Association, by striking members of the Brotherhood of Locomotive Engineers' and the Brotherhood of Locomotive Firemen and Enginemen. Following the organization of this new union enginemen and firemen on several of the roads involved in the switching strike walked out and further aided in the traffic tie up, although the movement did not gain extensive headway and has not resulted in any serious trouble.

Thursday, Friday, Saturday and Sunday, April 8, 9, 10 *and* 11. During these days there was no change in the situation at Chicago. With the aid of the men who had taken the places of the strikers the accumulation of traffic in the Chicago yards was cleaned up and, with the small amount of freight coming into Chicago because of the embargoes placed by practically all of the affected lines, the men were able to handle practically all of the traffic which was offered. During this time also the situation was practically deadlocked with no additional men walking out and with but slight increases in the number of men available for handling traffic. During all of this time the railroads in Chicago were operating approximately 50 per cent of the normal number of switch engines. During this period also reports were circulated that mediation between the strikers and the railway companies was to take place. These reports were vigorously denied in statements issued on behalf of the railroads, all of which said in general that there could not be mediation between the strikers and the companies, inasmuch as the companies now have contracts with the Brotherhood of Railway Trainmen and the Swithmen's Union of North America, and the question of increased compensation for the members of these organizations is already up for consideration before the Railroad Labor Board, which was to be appointed by President Wilson.

On April 10, definite breaks began to appear in the ranks of the strikers, small numbers of men returning to their work on several of the roads. As a result of the improved conditions at this time embargoes were lifted gradually and conditions generally were favorable to an increase in the amount of freight traffic which could be handled in the Chicago switching district.

Monday, April 12. The reaction toward the Chicago strike throughout the country and especially in the east by this time gave a national rather than a local aspect to the situation and enabled the federal government to view the strike as a violation of federal laws and as a result reports of contemplated action on the part of the government were frequent. Insofar as the situation in Chicago was concerned it continued to improve, there being increases noted in the number of men returning to work and in the amount of live stock, coal, etc., moved both in and out of Chicago.

Wednesday, April 15. During the day decided breaks in the ranks of the strikers were reported. The situation in general is adequately described in a statement made public on behalf of the railroads during the day, reading as follows: Strike situation in Chicago shows improvement today as indicated by facts that roads involved worked 408 engines yesterday as compared with 765 switch engines normally worked under favorable conditions. This improvement in switching crews during the past week is shown by the following figures indicating the number of switch crews in service daily on roads involved: Monday, 355; Tuesday, 322; Wednesday, 328; Thursday, 331; Friday and Saturday, 341 each; Sunday, 354; Monday, 349; Tuesday, 386; Wednesday, 408. The switchmen on the Rock Island and the Soo Line voted to return. Employees on other roads will undoubtedly do likewise. The striking firemen on the Pennsylvania returned to service. Also small groups of switchmen and firemen on other roads affected. Live stock moved into stock yards showed an increase of 83 cars over the previous day. Also an increase of 71 cars of fresh meat shipped from Chicago to Eastern points. Passenger and suburban business, unaffected.

The Effect at Washington

WASHINGTON, D. C.

Official Washington seemed somewhat at a loss as to how to deal with a leaderless strike, and there was some questioning as to whether the various sporadic strikes had not been indirectly inspired by leaders of the standard labor organiza-

tions who had been deterred from acting in the usual way by a wholesome fear of injunction proceedings such as were used in the case of the coal strike. This feeling was to a large extent dispelled, however, by the reports of the activity of the brotherhood executives in trying to persuade the insurgent strikers to return to work and in furnishing strikebreakers from the union ranks. The inflammatory propaganda of the Plumb Plan League was given considerable credit for having incited the spirit which prompted the walkouts in many places, but no good explanation was offered as to why unorganized and sporadic strikes happen to occur at the terminals where they can be most effective in interfering with transportation without some form of leadership and inspiration.

It has been observed that for some reason the unorganized strikes seldom fail to include Washington and its vicinity, where they will be close enough to afford an object lesson to Congress, and on Sunday night the yardmen employed by the Washington Terminal Company left their work. On Monday about 220 employed at the Potomac yard of the Southern Railway also went out. The strike of the terminal yardmen interfered with the handling of through trains, both freight and passenger, and in some cases incoming passengers were required to leave the trains some distance out from the station. The strike at Potomac yards also interfered with movement from the southern lines.

Naturally, one of the first moves made in Washington was a demand for a Congressional investigation, and the Senate on April 9 adopted a resolution introduced by Senator McCormick of Illinois directing the committee on interstate commerce to conduct an inquiry, by sub-committee or otherwise, "respecting any existing strike of interstate railroad employees not conducted or authorized by any recognized organization of railroad employees." Chairman Cummins of the committee began to arrange for a hearing at Chicago on Tuesday, but after some telegraphic communication with the brotherhood leaders and after Senator Cummins and W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, had called at the White House on Monday and been assured that the labor board would be appointed on the following day, the plan for a hearing was called off and the committee held an executive meeting in Washington.

In proposing the resolution, Senator McCormick said that the Railroad Labor Board would have been in a position to take up the investigation "if the executive branch of the government had been functioning with full energy," and Senator Cummins was quoted as saying that the delay in appointing the board was "inexplicable and inexcusable."

A suggestion that the government take steps to prevent the strike by injunction was apparently contained in a telegram addressed by W. G. Lee, president of the Brotherhood of Railroad Trainmen, to Representative Cooper of Ohio, a former railroad trainman. The telegram said:

"Illegal strike of switchmen spreading all over country, regardless of efforts of officers, brotherhood and Switchmen's Union. Only bona fide organizations entitled to represent yardmen. It seems strange that present laws against strikes of railroad employees can be threatened or used only against bona fide labor organizations that have supported government at all times and made good their contracts with railroads. Must we understand that such laws do not apply to renegade organizations or those inciting illegal strikes?"

Representative Cooper took the matter up with the Department of Justice and was told that the department was watching the situation. The provisions of the Lever act prohibiting conspiracies to limit the production or distribution of food and other necessities were used as the basis of an injunction against the officers of the miners' union that had ordered the coal strike, and while they have not been applied in connection with any railroad strike the possibility that they might be so used has been regarded in some quarters as one of the reasons for the less belligerent attitude assumed by the labor leaders since November 1.

It was announced that the Department of Justice was keeping in close touch with the situation and receiving reports from the districts affected by the strikes. Attorney General Palmer returned to Washington on Monday from a speaking tour and conferred with Joseph P. Tumulty, secretary to the President, regarding the strike situation. He told newspaper men that "the people's interests are going to be protected," but it was understood that the government was not inclined to take any precipitate action, such as the use of an injunction, as long as it appeared likely that the railroad managements and the brotherhood officials might be able to deal with the situation. It was feared that an injunction against those who have openly incited strikes in the various cities might merely inflame many others whom it would be difficult to reach by similar proceedings. The Department of Justice on Tuesday telegraphed to Presidents Smith of the New York Central and Rea of the Pennsylvania asking them to send at once the names of all of their employees who are on strike, indicating the names of any of them who appear to be leaders.

G. W. W. Hanger of the Board of Mediation and Conciliation went to Chicago and returned to Washington, saying that the dispute between the brotherhoods and their members afforded no room for action by the board and that any wage demands should be referred to the new labor board.

The strikers were roundly denounced in the Senate on Monday after Senator Poindexter had introduced a bill providing for a fine or imprisonment or both for persuading or attempting to persuade employees to quit their work with intent to interfere with the movement of commodities in commerce, for the use of violence or threats to prevent employees from continuing their work, or for destroying cars, bridges, etc., or persuading others to do so, with intent to interfere with commerce. The Senator said that none of these prohibitions affect in any way the right of any individual to quit his employment at any time he sees fit and that the attempt which has brought about this paralysis of interstate commerce is not the assumption of the right of men to quit their employment but is their exercise of a right to persuade or coerce others to quit their employment.

Senators Frelinghuysen, Edge, Thomas and Kellogg also criticised the strikers and to some extent Congress for failing to pass more drastic legislation dealing with strikes. "There is nothing haphazard about this strike in my opinion," said Senator Thomas. "It betrays an organization, thorough, systematized, acting upon common lines of previously conceived effort and punishing if not designed to punish 110,000,000 innocent people so severely as to compel their adhesion to or their acquiescence in any measure demanded by extreme leaders, of which the Plumb plan is one." He said he was glad that the strike had not received the countenance of the official heads of the brotherhoods, but he said the strikers are following the example which those heads have set in the past.

Senator Edge of New Jersey introduced a bill on Tuesday providing that an employee of an interstate railroad or of an industry supplying any commodity essential to the continued operation of interstate commerce, who quits his employment either in combination with a substantial number of his fellow employees or at or about the same time that a substantial number quit for the purpose of obtaining better conditions of employment, shall be guilty of a misdemeanor and punishable by a fine or imprisonment. The bill would also make it unlawful for two or more persons to agree to do anything or omit to do anything the natural consequence of which would be to interfere with the movement of commerce or diminish the supply of necessary commodities.

Mail Service

Otto Praeger, second assistant postmaster general, sent a telegram to all superintendents of the railway mail service

instructing them to instruct all chief clerks, transfer clerks and others to report any obstructions, directly or indirectly, by conspiracy or otherwise, of the passage of mails as a result of strikes and to bring them to the immediate attention of local postoffice inspectors and district attorneys with a request that offenders be vigorously prosecuted if the facts warranted.

Statement by the Attorney General

The outlaw railroad strike is a manifestation of the working out of the program of the International Communist Party in America, which includes the activities of the I. W. W. and other revolutionary organizations, under general directions dictated from Russia and other European centers of communistic propaganda, according to a statement made on Wednesday evening by Attorney General Palmer.

The railroad workers, said Mr. Palmer, have been led into this unauthorized strike and taken advantage of by leaders for far deeper purposes than they had any idea of. "The purpose is to capture the industries of the country, secure political power, overthrow governments and establish a dictatorship of the leaders of the so-called proletariat; they would transport to this country the chaotic conditions that exist in Russia."

Mr .Palmer gave out copies of letters and other documents outlining the plan of organization and purposes of the movement. He said that the Department of Justice has known for some time of these plans and also of dates fixed for country-wide strikes in other industries, as well as of efforts to promote a general uprising for May 1. W. Z. Foster and some of his associates who brought about the steel strike have been active in promoting the railroad strike, said Mr. Palmer, and he gave the names of other leaders who have followed the "boring-in" policy and sought to play upon the spirit of unrest and the dissatisfaction with the leadership of the brotherhoods, and the A. F. L.. The purpose is to destroy those bodies and promote a movement for one big union which would be secretly under I. W. W. leadership. The President's cabinet met and discused the strike situation Wednesday morning and the Attorney General submitted a report, but no course of action was announced. The President telegraphed to the members of Railroad Labor Board to come to Washington at once, assuming that their appointments would be confirmed by the Senate during the day. The Senate committee had recommended confirmation; but there was some opposition to Messrs. Hanger, Hunt and Forrester, and action was postponed.

The president's cabinet discussed the the strike situation on Wednesday and Attorney General Palmer submitted a report but no decision as to any course of action was announced. The President telegraphed to the members of Railroad Labor Board asking them to come to Washington at once and assume duty, saying he expected their appointments to be confirmed by Senate during the day.

The Use of Motor Trucks

Plans for the use of motor trucks to supplement the efforts of the railways in meeting the strike conditions were discussed by the Council of National Defense and the Federal Highway Council. It would be possible for the government on comparatively short notice to mobilize about 45,000 of its own motor trucks, according to a statement issued by Herbert N. Shenton, acting director of the Council of National Defense, and feasible to reinforce them with 700,000 privately owned trucks, and eventually with about 7,000,000 passenger automobiles." Of the government trucks, he said, 1,800 could be equipped and manned by the Motor Transport Corps of the War Department for the relief of New York in a few days; and about 100 of the trucks could be rushed to each of the principal cities. Charles W. Reid, manager of the transportation bureau of the Federal Highways Council, telegraphed to the affiliated chambers of commerce and other business bodies in all the principal cities affected by the strike to make a comprehensive report of the condition of the railways in respect to their cities, and preparations were made to line up these organizations for volunteer truck transport service. A meeting of the former Highways Transport Committee of the Council of National Defense was held on Monday at Washington, and the chairman, S. M. Williams, said that the entire machinery of the organization had been tendered to the council to help it to meet the emergency. After the meeting the following statement was issued:

"The Motor Transport Corps of the army is ready to move to the aid of any city imperiled by the 'outlaw' railway strike the instant it receives orders. Detailed plans have been prepared and the corps is ready to co-operate with whatever civil department of the government may be authorized to represent the federal government. This information was laid before officials of the Federal Highway Council when they consulted with former members of the highways transport committee of the Council of National Defense this afternoon, and thereafter advised that the Council of National Defense should undertake the central co-ordination of the various schemes for utilizing motor transport should the switchmen's outlaw strike continue.

"The conference was of the opinion that since the strike is decentralized rather than national in its scope it presents a group of local transportation problems which must be dealt with in the especially affected congested centers.

"It was, therefore, recommended that the Council of National Defense should communicate with the mayors of the strike center cities and suggest the organization of a pool of all motor trucks, the same to be directed by a local committee, which should include representatives of the transportation bureaus of local chambers of commerce, of the railways, of the truck users, of the Motor Transport Corps of the War Department and a representative of the Council of National Defense, should the latter be the body through which the federal government should act in co-ordinating capacity.

"It was advised that this local committee should have full power to establish priorities as to goods to be moved by the pooled trucks and as to who should have the use of them. In general, it was thought that army trucks could be used to bring necessary goods into affected cities from a distance of up to 75 miles; and it was ascertained that the army is ready with its trucks should it receive instructions to act.

"The Federal Highway Council has tendered all the resources of its organization to the Council of National Defense for the purpose of securing some central direction of the situation.

"This body has 1,300 organization members, such as chambers of commerce, Rotary and Kiwanis clubs, Travelers' Protective Association, United Commercial Travelers, etc., and 19,000 individual members, and the director of its transportation bureau was executive officer of the highways transport committee of the Council of National Defense during the war and is representative of the highway transportation interests of the country."

THE CAUSE OF UNION LABOR and of collective bargaining and of that public responsibility to which great power in union must hold itself if it is to exist, is being given a blow at its own hands that cannot be recovered from in years.—*The N. Y. World.*

HOWEVER DIFFERENT THE INSURGENT STRIKE may be from the ordinary strike in the respect that it reveals a cleavage in labor's ranks, it is not different from the ordinary strike in the sense that it is an unwarrantable wrong against the public generally and an unspeakable injury to organized labor itself.—*Houston Post.*

Increasing Locomotive Operating Efficiency

Adapting Design to Service Conditions; Modernizing; Reassigning; Accurate Train Loading

By R. S. Mounce

IF THERE EVER WAS A TIME in the history of American railroads when savings in operating costs were a vital necessity, that time is now. The costs of labor and materials of every kind are higher than ever before, and there seems but little likelihood of any reductions in these items for some time to come. However, it is quite possible partially to offset these increased costs by means entirely within the control of the mechanical and operating officers of the railroads. One of the most important fields of endeavor along the line suggested is the matter of securing the maximum operating efficiency of locomotives. In the discussion of this important subject four factors will be considered, the first three somewhat briefly and the fourth at some length.

1. Design of New Locomotives to Meet Most Fully the Operating Conditions in the Territory or on the Division to Which They Will Be Assigned.

The design of passenger locomotives involves a careful analysis of grades, curves, bridge and track limitations, train weights and speeds both over ruling grades and over the division as a whole. The type, size and characteristics of the contemplated locomotives will depend largely on the above data, but it is imperative to insure a sufficient starting tractive power by providing first-class engine efficiency and large sustained tractive power at high speeds which requires a boiler of ample steaming capacity.

It goes without saying that full advantage will be taken of the latest approved labor and fuel-saving devices in the design of locomotives for all classes of service. But in high speed locomotives, particularly, the use of light weight reciprocating parts should not be overlooked. Their advantages apply not only to the machine itself but to the roadway as well.

New freight locomotives demand a detailed study of every physical and operating condition of the territory or division involved. It is assumed that new power for first-class railroads will be large units equipped with every device which makes for economy.

Bridge and roadway conditions will determine the limiting weight per pair of drivers and will have a bearing also on the total weight and wheel base of the locomotive. The topography of the division will influence the length of the rigid wheel base. If very large units are required and curvature conditions limit the wheel base to four connected drivers it may be economical to go to a light Mallet type, while if there is no serious curvature a heavy Santa Fe type locomotive will probably meet the requirements.

The economical train load, together with the required speed over the division, taken in conjunction with ruling grades, will give a basis for the determination of driving wheel diameter, piston stroke, cylinder diameter, boiler pressure and maximum tractive effort. The question as to whether the locomotive will operate at high speeds, low speeds or whether it is to be suitable for fairly high speeds and at the same time powerful enough to handle very heavy trains at lower speeds will also have to be taken into account in the determination of these details, but the higher the speed required the greater must be the steaming capacity of the boiler.

In general, the economical train load will be determined largely by the characteristics of the topography of the division, which will influence the train length, and by the nature of the principal business handled over the territory, which will have a bearing on average car weights, and, in the ratio of empties to loads, on average train weights. The nature of the business handled also will have some influence in the matter of speeds.

Too careful attention cannot be given to the design of fireboxes and grates in all locomotives, regardless of the class of service. Even a small saving in fuel consumption means much in locomotive operation, and the first place to make such savings is in the firebox. Proper firebox volume, correct height of crown sheet above grates, a well-placed brick arch and sufficient air openings through ashpans and grates, together with well-designed grate bars, all based on the nature of the fuel to be burned, will result in the best fuel economy. The addition of a high-degree superheater of ample capacity augments the savings in the firebox and gives a very efficient boiler. Further increase of boiler efficiency appears to be a probability of the near future, because the development of successful feedwater heaters has already passed the experimental stage.

Another feature which must not be overlooked in the selection of locomotives is the matter of shop and enginehouse facilities. Inadequate facilities for making classified and running repairs will offset to a considerable extent fuel and other savings resulting from the operation of large units of power.

2. Modernizing the Older Types of Locomotives by the Application of Labor and Fuel Saving Devices.

If a locomotive is worth continuing in service it certainly should be modernized by the addition of at least some of the highly developed labor and fuel-saving devices whose advantages are now so well established.

These devices have been applied to practically all locomotives of recent construction, and many railroads have done much to modernize some of their better power by the application of the devices referred to. But more remains to be done, because any locomotive not modernized is a poor investment, for the reason that it is not doing as much work as it ought to for a given amount of fuel burned, and if the prevention of this loss of power would not show a good return on the cost of making the improvements then that locomotive is not a paying proposition.

No time should be lost in making a survey of all old power from the standpoint of modernization, comparing estimated savings due to increased power and greater fuel economy with fixed and maintenance charges on the proposed improvements. In making such a survey yard power is worthy of special attention, because terminal yard congestion is becoming serious at a great many places, and such a condition greatly retards the movement of freight over the entire railroad. Yard expansion is frequently next to impossible, but relief can be had by making such improvements in yard locomotives that they will start faster, handle more cars and spend more time in actual switching or transfer work by requiring less coal and water. This can be done by the use of power reverse gears and superheaters.

3. Assignment of Existing Locomotives to Territory Where Their Characteristics Will Be Best

Adapted to the Physical Conditions Under Which They Will Operate.

Beyond all doubt many railroads are failing to secure large economies in locomotive operation because they are neglecting to study carefully the characteristics of locomotives already in service from the same standpoint as that which should be used in the selection of new locomotives—namely, adaptability to operating conditions.

The same items must be studied, both in the reassignments of existing locomotives and in the design of new locomotives, but the problems are somewhat different. In the case of locomotives already in service, trainloads will have to be adjusted to the locomotive rather than, in the case of new power, building the locomotive to handle the desired maximum trainload, and the cost of locomotive operation per ton-mile may not, of course, be kept as low as it can in the case of specially designed large units of power. But modernizing the older power and putting it to work in a territory where its characteristics and capacity will permit it to operate most satisfactorily will amply warrant the required investigation and the possible temporary inconvenience of transferring power from one division to another or over several divisions.

If, in the reassignment of existing power, all locomotives of a class can be concentrated on one division or on two or even three adjacent divisions further economy will be secured from a maintenance standpoint, for the reason that smaller stocks of repair parts will be necessary to maintain the locomotives if the entire group in one class can be served from one or two adjacent repair points.

In some cases locomotives not suitable for their present class of service will, with a moderate expenditure for any necessary modifications, be very satisfactory for another class of service. For example, light Consolidation type locomotives may no longer be suitable for road freight service, but by installing superheaters and power reverse gears, if these devices have not already been applied, removing the engine truck and making the necessary adjustment in spring equalization, these locomotives will undoubtedly be entirely suitable as eight-wheel switchers for yard or transfer work.

4. An Accurate and Practical Freight Train Loading Method Applicable Under All Conditions.

Too strong emphasis cannot be placed on the importance of properly loading locomotives. It is almost obvious that a locomotive underloaded is wasting a portion of its hauling capacity and that one which is overloaded is retarding operation; in either case there is an economic loss.

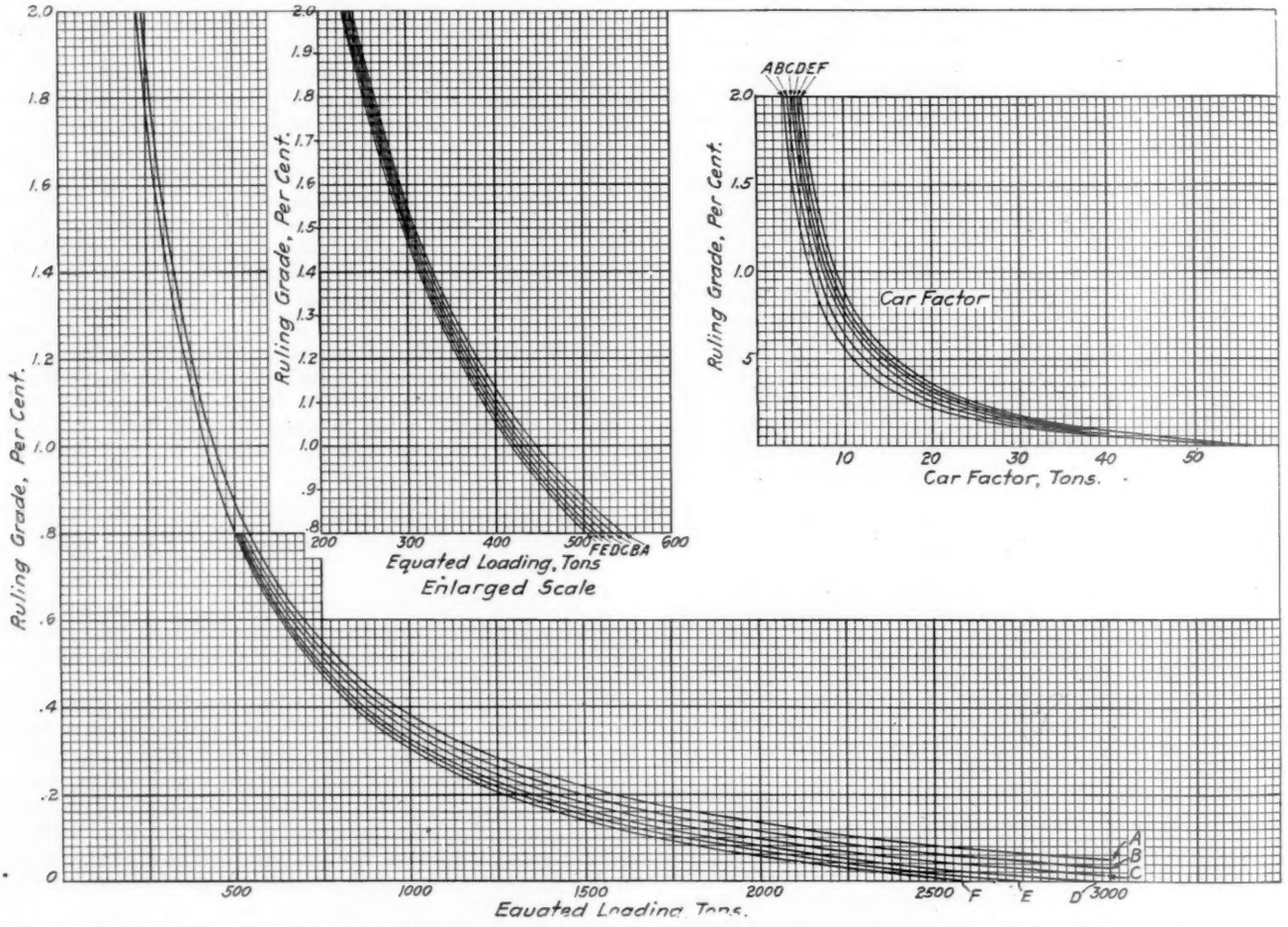


Fig. 1—Standard Loading Chart for 10,000-Lb. Available Tractive Effort at Speeds Between 5 and 12 M.P.H. Under Various Weather Conditions

Any train-loading method to be satisfactory must be easy to apply and should involve no loss of time in making up trains. For this reason no calculations should be left to the yard forces other than the necessary addition of gross car weights and the allowance for car friction. Allowance for car friction should be a constant quantity for a given weather condition on any division and of such a value that it will accurately equate any combination of car weights entering into the make-up of the train. It has been established that the friction allowance cannot be constant for all temperature conditions, because if it is correct for summer conditions it will be too small at low temperatures. This feature will be fully covered later.

The train-loading method given herewith has been thoroughly tested under a wide variation of weather conditions on both low grade and hilly railroads. The data have been reduced to graphic form where possible, and it is believed that the amount of calculation necessary to apply the method to specific conditions will be comparatively small.

Standard Loading Chart.—A standard loading chart showing the equated loading for an available drawbar pull of 10,000 lb. on grades from zero to two per cent, together with corresponding car factors, is taken as the basis for this train-loading method. A loading curve and its corresponding car factor are plotted for six different weather conditions in Fig. 1. It is assumed that these loading curves are applicable to speeds of from five to twelve miles per hour over ruling grades.

Data for this chart are obtained in the following manner: Train resistances per ton for various car weights, as shown in the proceedings of the Master Mechanics' Association, for good average track conditions, were verified by further tests. These figures for 10 miles per hour were taken to be substantially correct for speeds between 5 and 12 miles per hour. The average increased train resistance per degree Fahrenheit drop in temperature has been shown by test to be .715 per cent. The several temperature loadings are designated *A, B, C, D, E* and *F,* and the resistance per ton for cars of 70 and 20 tons gross weight as used in the chart are shown in the table below. The resistances for loadings *B* to *F,* respectively, are calculated, using the above data based on the figures 4.25 and 9.00 lb. per ton at loading *A,* for 70 and 20-ton cars, respectively.

	Weather loadings		Resistance, lb. per ton, on level tangent track	
Rating	Temperature range deg. F.	Average temp. deg. F.	70-ton cars	20-ton cars
A	50 and above	70	4.25	9.00
B	49 to 35	45	5.00	10.60
C	34 to 20	25	5.60	11.90
D	19 to 5	10	6.10	12.90
E	4 to —10	—5	6.50	13.80
F	—11 and below	—20	7.00	14.80

The formulæ used to derive the curves shown on the standard loading chart are:

70-ton cars—

$$\text{Train load (tons)} = \frac{P}{r}$$

$$\text{Number of cars in train} = \frac{P}{70\ R}$$

20-ton cars—

$$\text{Train load (tons)} = \frac{P}{r}$$

$$\text{Number of cars in train} = \frac{P}{20\ r}$$

$$\text{Car factor} = C = \frac{\frac{P}{R} - \frac{P}{r}}{\frac{P}{20r} - \frac{P}{70R}} = \frac{70\ (r - R)}{3.5\ R - r}$$

$$\text{Equated train loading} = \frac{P}{R} + \frac{PC}{70R} = \frac{P}{r} + \frac{PC}{20r}$$

Where P = Available tractive effort.
R = Total resistance, per ton for 70-ton cars.
r = Total resistance, per ton for 20-ton cars.

Applying these formulæ to one point on one of the curves, together with a check of the derived car factor to prove its accuracy in equating various car weights:

Assume:
Weather rating *A*
Equivalent grade, .5 per cent = G
P = 10,000 lb. (basic figure)

Then $R = 4.25 + 20\ G = 4.25 + 10 = 14.25$ lb. per ton
and $r = 9.00 + 20\ G = 9.00 + 10 = 19.00$ lb. per ton

$$\text{Car factor} = \frac{70\ (19.00 - 14.25)}{3.5 \times 14.25 - 19.00} = 10.7 \text{ tons}$$

$$\text{Equated train loading} = \frac{10{,}000}{14.25} + \frac{10{,}000 \times 10.7}{70 \times 14.25}$$

$$= 809 \text{ tons}$$

$$\text{or} = \frac{10{,}000}{19.00} + \frac{10{,}000 \times 10.7}{20 \times 19.00} = 808 \text{ tons}$$

In this manner the series of equated train loading and car factor curves shown in Fig. 1 are derived.

Available Tractive Effort of Locomotives—Fig. 2 shows the per cent of the theoretical cylinder tractive effort at various piston speeds up to 600 ft. per minute for modern hand-fired locomotives, both with and without superheaters. These curves are derived from reliable test data and represent good average locomotive conditions, and give a basis for calculating available tractive effort at various speeds for modern locomotives, by using the following data and formulae.

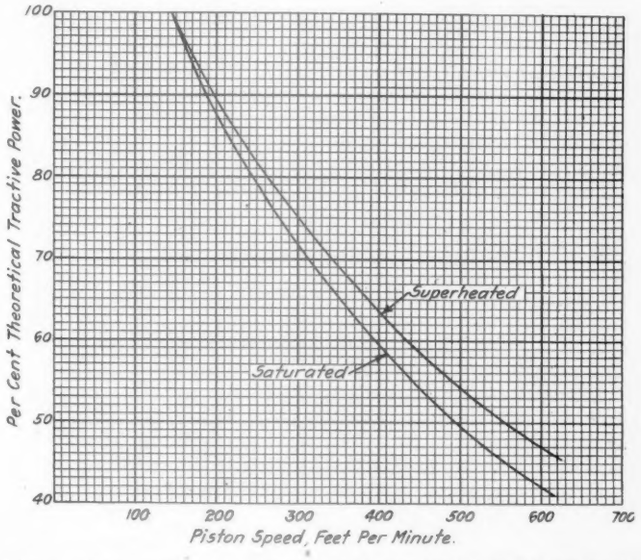


Fig. 2—Percentage of Theoretical Tractive Effort Developed at Various Speeds

$$\text{Piston speed (ft. per min.)} = 56 \times \text{m.p.h.} \times \frac{S}{D}$$

Where m.p.h. = Speed, miles per hour
S = Piston stroke, inches
D = Diameter of drivers, inches

Internal resistance of locomotive = sum of resistances of drivers, engine and tender trucks, and grade resistance.

1. Resistance of drivers, lb. = $W_D \times 22\frac{1}{2}$
2. Resistance of engine and tender trucks, lb. = $(W_{ET} + W_{TT} + W_T)\ (3 + \frac{V}{6})$
3. Resistance due to grade, lb. = $W_{TOT} \times 20 \times G$

W_D = Weight on drivers, tons

W_{ET} = Weight on leading truck, tons

W_{TT} = Weight on trailing truck, tons

W_T = Weight on tender, tons

W_{TOT} = Total Weight, engine and tender, tons

V = Speed, miles per hour

G = Equivalent grade, per cent

Available tractive effort = cylinder tractive effort — internal resistance of locomotive.

For each class of locomotive for which train loading data are desired, a chart showing the available tractive effort at various speeds over the range of grades encountered, should be prepared. The following example shows how easily this can be done:

MIKADO TYPE LOCOMOTIVE WITH SUPERHEATER, CLASS S-4.

Cylinders	28 in. by 32 in.
Drivers	63 in.
Boiler pressure	180 lb.
Weight on drivers	240,000 lb.
Weight on leading truck	29,000 lb.
Weight on trailing truck	52,500 lb.
Weight on engine, loaded	321,500 lb.
Weight on tender, loaded	162,500 lb.
Weight on engine and tender, loaded	484,000 lb.
Theoretical tractive effort (at 85 per cent B. P.)	60,900 lb.

Fig. 2 shows that the maximum tractive power is obtained from the starting speed up to a piston speed of 145 ft. per minute.

Substituting this value in the formula stated above:

$$145 = 56 \times \text{m.p.h.} \times \frac{32}{63}$$

m.p.h. = 5.1, speed below which locomotive will give maximum available tractive effort.

At this speed, 5.1 miles per hour, the available tractive effort on level tangent track will be:

60,900 minus resistances 1, 2 and 3.

1. Drivers $= \frac{240{,}000}{2{,}000} \times 22\frac{1}{2} = 2{,}700$ lb.

2. Engine and tender trucks $= \frac{29{,}000 + 52{,}500 + 162{,}500}{2{,}000} \times \left(3 + \frac{5.1}{6}\right) = 470$ lb.

3. Grade = O

Sum of friction and grade resistances = 3,170 lb.

Available tractive effort = 60,900 — 3,170 = 57,730 lb.

For a three per cent equivalent grade at this speed, resistances 1 and 2 are the same as for level tangent track, but:

3. Grade $= \frac{484{,}000}{2{,}000} \times 20 \times 3 = 14{,}200$ lb., and the total friction and grade resistance = 17,370 lb.

Available tractive effort = 60,900 — 17,370 = 43,530 lb.

Plotting these two points on a chart, Fig. 3, and connecting them by a straight line, gives the available tractive effort over equivalent grades up to three per cent for locomotive Class S-4, at speeds below 5.1 miles per hour. Using the same formulae, available tractive effort curves for speeds of six, seven, eight, nine and ten miles an hour are plotted. These curves give complete available tractive effort data for Class S-4 locomotives. The same process is followed for the various classes of locomotives to be used, and these charts, of the form shown in Fig. 2, together with the standard loading chart, Fig. 1, make further calculations unnecessary and the process of obtaining standard loading over any division a comparatively simple one.

Application of the Method to a Given Set of Operating Conditions—Case I.—Typical hilly division with heavy ruling grade in one direction. Profile shown by Fig. 4, all

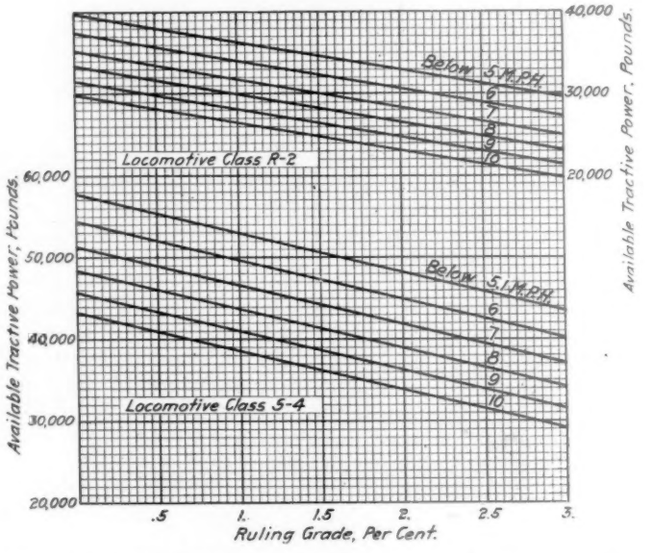


Fig. 3—Available Tractive Effort for Two Typical Locomotives Under Various Conditions of Speed and Grade

grades compensated for curvature. The operating conditions on the *AB* division are assumed to be as follows:

Total time allowed for making a trip over the division in either direction, including terminal and road delays	8 hrs. 0 min.
Average terminal delays	1 hr. 0 min.
Taking water and other road delays	0 hr. 45 min.
Time left for making run within the eight hours	6 hrs. 15 min
Length of division	93 miles
Average speed over division	16½ m.p.h.

Northbound, the *AB* division has 46 miles of heavy ascending grade, 37 miles of low descending grade and 10 miles of level road. The descending grade and level portion can be covered in approximately one hour and 45 minutes, leaving four hours and 30 minutes to cover the 46 miles of ascending grade, over which the average speed will, accordingly, be slightly more than 10 miles per hour. This average speed can probably be maintained if the train loading is based on a speed of nine miles per hour over the .76 per cent ruling grade.

Southbound this division has 37 miles of low ascending grade and 46 miles of heavy descending grade and 10 miles of level road. The run over the descending grade and level stretches will not require over two hours, leaving four hours and 15 minutes in which to make the 37 miles of ascending grade, at an average speed of 8.8 miles per hour. At a speed of 8.5 miles per hour over the .2 per cent ruling grade, which is 13 miles in length, this average speed should be easily maintained.

Assuming that train loading is desired for Class S-4 locomotives over the *AB* division, the procedure is as follows:

Northbound.—From Fig. 3, for the Class S-4 locomotive, the available tractive effort at nine miles per hour on the ruling grade of .76 per cent is 42,250 lb. (4,225 x 10,000 lb.) The standard train loading chart, Fig. 1, gives the follow-

ing data for 10,000 lb. available tractive power on a .76 per cent grade:

EQUATED LOADING FOR CLASS S-4 ON .76 PER CENT GRADE FOR VARIOUS WEATHER CONDITIONS

Weather	A	B	C	D	E	F
Equated tons	565	550	540	534	530	525

Multiplying these figures by 4.225 gives the equated loading for the S-4 locomotive.

The car factor for a .76 per cent grade, taken to the nearest one-half ton is:

CAR FACTOR ON .76 PER CENT GRADE FOR VARIOUS WEATHER CONDITIONS

Weather	A	B	C	D	E	F
Equated tons	7½	8½	9½	10	11	11½

Southbound.—In a similar manner, for a .2 per cent grade and a speed of 8.5 miles per hour, the available tractive effort = 46,100 lb. (4.61 x 10,000 lb.) The equated loading for 10,000 available tractive power on .2 per cent grade is as follows:

EQUATED LOADING FOR CLASS S-4 ON .2 PER CENT GRADE FOR VARIOUS WEATHER CONDITIONS.

Weather	A	B	C	D	E	F
Equated tons	1,570	1,480	1,405	1,345	1,305	1,265

CAR FACTOR ON .2 PER CENT GRADE FOR VARIOUS WEATHER CONDITIONS.

Weather	A	B	C	D	E	F
Equated tons	21	23	25	26	27	27½

The final train loading, Class S-4 locomotive over the *AB* division would then be:

EQUATED TRAIN LOADING FOR CLASS S-4, TONS

	A	B	C	D	E	F
Northbound						
Weather						
Car factor, tons	7½	8½	9½	10	11	11½
Equated tons, locomotive, Class S-4	2,387	2,324	2,282	2,256	2,239	2,218
Southbound						
Weather	A	B	C	D	E	F
Car factor, tons	21	23	25	26	27	27½
Equated tons, locomotive, Class S-4	7,235	6,825	6,475	6,200	6,015	5,830

Case II.—Tonnage rating for a typical low grade division. Profile shown by Fig. 5. All grades compensated for curvature.

The operating conditions on the *CD* division are assumed to be as follows:

Total time allowed for one way trip over the division, including terminal and road delays	12 hrs. 0 min.
Average terminal delays	1 hr. 0 min.
Taking water and other road delays	2 hrs. 0 min.
Time left for making run within the 12 hours	9 hrs. 0 min.
Length of division	138 miles
Average speed over division	15 ⅓ m.p.h.

Northbound the *CD* division has 68 miles of slightly ascending grade, 45 miles of slightly descending grade and 25 miles of level road. The run over the level and descending portions of the division can be made in about three hours, leaving six hours in which to cover the 68 miles of ascending grade, at an average speed of 11.3 miles an hour. On account of the general low grade nature of this division, the ruling portion of which is but .25 per cent northbound, this average speed can probably be maintained if the train passes over the two ruling portions, of six and three miles in length, respectively, at a speed of 10 miles an hour.

Southbound, this division has but 45 miles of slightly ascending grade, 68 miles of slightly descending grade and 25 miles of level road. The descending and level parts of the division can be covered in approximately four hours, leaving five hours in which to traverse the 45 miles of ascending grade, at an average speed of nine miles an hour. For the reason that practically all of this grade is about .2 per cent, the maximum southbound grade, nine miles per hour is taken as the speed over the ruling grade.

On account of the prevailing general low grade character of the *CD* division a smaller locomotive than the Class S-4 Mikado is to be used, the Class R-2 superheated Consolidation type locomotive having been selected. Data regarding the available tractive effort for this class of locomotive are shown in Fig. 3.

Northbound.—The speed over the ruling grade is assumed

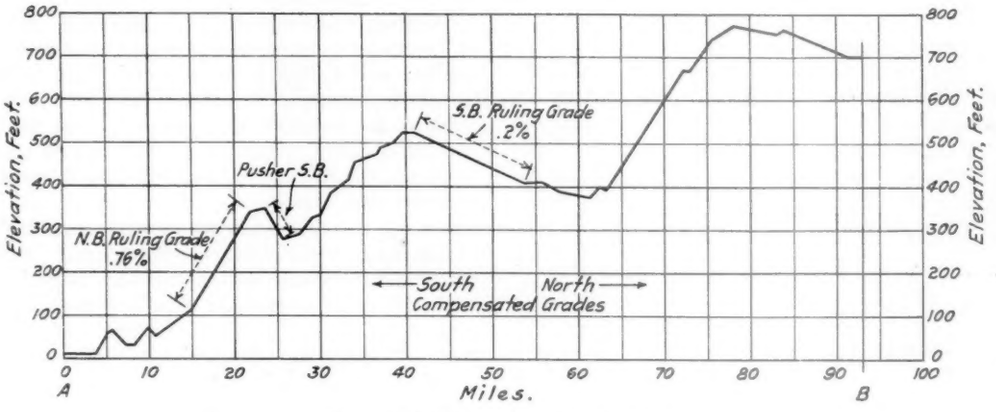


Fig. 4—Profile of the A-B Division

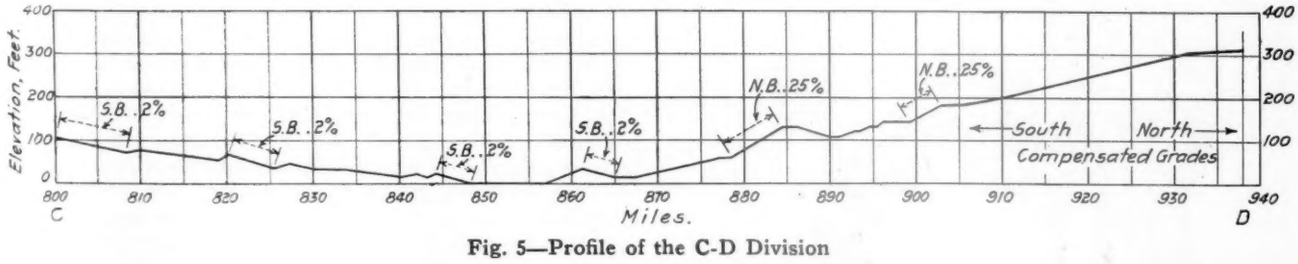


Fig. 5—Profile of the C-D Division

to be 10 miles an hour. The available tractive effort at this speed over a .25 per cent grade is 29,000 lb., or 2.9 x 10,000 lb.

From the standard loading chart, Fig. 1, the loading data for 10,000 lb. available tractive effort on a .25 per cent ruling grade is found to be as follows:

EQUATED LOADING FOR CLASS R-2 ON .25 PER CENT GRADE

Weather	A	B	C	D	E	F
Equated tons	1,195	1,140	1,095	1,060	1,037	1,012

The corresponding car factors are:

Weather	A	B	C	D	E	F
Car factor, tons	18	20	21½	22½	23½	24½

Southbound.—Similarly for a .2 per cent grade and a speed of nine miles per hour, the available tractive effort is 30,800 lb. or 3.08 x 10,000 lb. The equated loading for 10,000 lb. available tractive power on a .2 per cent grade and the car factors are:

Weather	A	B	C	D	E	F
Equated tons	1,570	1,480	1,405	1,345	1,305	1,265
Car factor, tons	21	23	25	26	27	27½

The final train loading for the Class R-2 locomotive over *CD* division would then be:

EQUATED TRAIN LOADING, TONS

Northbound

Weather	A	B	C	D	E	F
Car factor, tons	18	20	21½	22½	23½	24½
Equated tons, locomotive, Class R-2	3,465	3,305	3,175	3,075	3,005	2,935

Southbound

Weather	A	B	C	D	E	F
Car factor, tons	21	23	25	26	27	27½
Equated tons, locomotive, Class R-2	4,835	4,560	4,330	4,125	4,020	3,895

The foregoing method of freight train loading is working out very well in practice. To apply it successfully, it is of course necessary to have an accurate knowledge of the operating conditions, and profile and topography of that portion of the railroad under consideration. It is to be expected that slight changes will, in some cases, be necessary in the loading figures assigned from the standard charts used, dictated, of course, by service trials of the predetermined loadings. The basic idea in presenting this method of train loading is to afford a reasonably accurate means of loading locomotives to their economic capacity, without necessitating extensive tests to determine equated loads and friction allowances.

From the N. Y. World

The New Hold-Up Man

Commission Expresses Views on Proposed Legislation

SENATOR CUMMINS, chairman of the Senate committee on interstate commerce, has made public a letter from Chairman Clark of the Interstate Commerce Commission setting forth the views of the commission on pending railroad legislation.

The commission's legislative committee expressed approval of Senator Frelinghuysen's bill which proposes to require the observance of seasonal differential rates on coal, the purpose being to secure a more even distribution of coal throughout the entire year, but opposed the provision prohibiting railroads from confiscating coal in transit.

The commission is of the opinion that S. 4031, which requires establishment and enforcement of "preferential rates" on shipments of cotton based upon the cubic contents of the bale, would revolutionize the practices and customs of marketing and shipping cotton which have prevailed in cotton-producing sections for many years, and it is not prepared to endorse the measure or express opposition to it.

Objection was made to S. 3183, which proposes to require an investigation as to warehouse and elevator facilities at export ports for the handling of grain and grain products. "The bill does not make any provision as to the carriers' ability to finance the acquirement of such facilities," the commission pointed out, and "it would apparently give precedence to those facilities over others which might be equally or more important in the public interest," and "the transportation act authorizes the commission to order a carrier to provide itself with safe and adequate facilities for performing as a common carrier its car service as that term is used in the act and to extend its line or lines." The term car service is defined as including the use, control, supply, movement, distribution, exchange, interchange and return of locomotives, cars and other vehicles used in the transportation of property, including special types of equipment.

Of S. 115, which would require the use of ventilated closed cars for the transportation of live stock in certain parts of the country and would prohibit during a part of the year transportation of live stock in open cars "or cars not having closed sides composed of material not less than one inch in thickness," the letter says that there are now in existence no cars that would meet these requirements and that "there is a deplorable shortage of cars of nearly every kind that are demanded in general transportation. It would, under present conditions, take a substantial period of time to acquire equipment that would meet the provisions of this bill even if there were no difficulties about financing the acquirement. We are inclined to doubt the advisability of such a requirement at this time and in view of the general conditions in connection with and surrounding our railroads and their ability to meet the transportation needs of the country. It is not at all impossible that at a later day it may be most desirable to prescribe a type of car for the transportation of live stock which by conversion can be available for other uses," the letter continues, adding that it would be most appropriate to "bend every energy to the acquirement of a sufficient number of cars of already known and approved design."

A RECORD FAST RUN. Another record run was made between Seward and Anchorage, when the regular mixed train on Wednesday, March 10, made the run in 6 hours 20 minutes. This train consisted of one buffet-observation car, one passenger coach, two carloads of commercial merchandise, one carload of supplies for the Alaskan Engineering Commission and one caboose. It left Seward at 8.00 a. m. and arrived in Anchorage at 2.20 p. m., in charge of Conductor G. L. Jenkins and Engineer F. W. Brayford. [Distance 114 miles; average rate, 18 miles an hour.]—*Alaska Railroad Record.*

Essential Considerations in Steel Specifications*

In Which It Is Emphasized That Service Requirements Should Be the Basic Principle

By F. A. Weymouth
Sales Metallurgist, Bethlehem Steel Company

A STEEL SPECIFICATION should be based on one principle and one principle only, and that is—

"The material furnished under this specification must be suitable for the service to which it is to be subjected."

While this seems perfectly obvious and elemental, this one basic consideration is frequently overlooked in many of our steel specifications. For example, if we are making containers that must stand in service a severe pressure, it is obviously more logical to test these finished containers with a pressure sufficient to allow the necessary factor of safety, and place our acceptance or rejection upon this test, rather than on a rigid surface inspection and tensile requirement on the material of which this container is made.

As a part of or supplemental to this basic principle, it should be kept in mind that the material should be no better than will meet these requirements of service, with, of course, a reasonable factor of safety.

This statement seems rather revolutionary, but we must keep in mind that an engineer is only efficient when he accomplishes a given object at the minimum cost. There has crept into the training of engineers of almost all branches a feeling that the engineer should confine himself to technical questions and leave the commercial considerations to the purchasing department, but the most successful engineers are those that develop the commercial and economic side of their work in conjunction with the technical. An engineer who specifies, for example, a high priced chrome nickel steel when a cheaper plain carbon steel will serve the purpose, or so writes a specification that the cost of the material is greatly increased without in any manner improving the quality, is a liability to his employer. His alibi usually is that "the best is none too good," when "the best" is sometimes much better than the service requires. The excess is money wasted.

Our whole economic situation in regard to steel usage needs careful attention. Hundreds of thousands of tons of steel that have just missed meeting the requirements of a high-grade steel by a small margin are scrapped, when such steel should be in service somewhere. This loss must be paid for, and it is certainly our duty to find uses for as much of the steel produced as we can, without in any way sacrificing the safety of our structures.

Conversely, an engineer is very short-sighted who does not recommend an article or type of steel that will give him longer life when that life is necessary, even at an advance in cost. Unfortunately, the railroad engineers have been greatly hampered in that they sometimes have very little control of purchases. Since everybody seems to be suggesting so-called remedies to be applied to the railroads, I may be pardoned if I were to suggest one change that would be reflected at once in maintenance and operating costs, and that is, "Give the engineers and master mechanics full charge over purchases of the materials they use."

In drawing up a specification, consideration should be given to previous experience of our own or of others using material for a similar purpose, together with information from the manufacturers, who not only have accurate, reliable information in regard to the physical properties of all grades of steel, but considerable data as to the use of various grades of steel for difficult purposes.

I have little regard for the man who, by spreading out before him all the existing specifications for that class of material and increasing the severity of each requirement, evolves a specification that is extremely difficult to meet, and sits back satisfied that he has produced the best specification because it is difficult for the manufacturer to meet the requirements. He certainly raises the cost of that material and may be specifying a steel that is wholly unsuitable for the service in which it is to be used. The foundation on which to build a specification is the observations of material in use, coupled with the knowledge of the basic physical properties of steel.

Keeping in mind the basic principle that a specification should be so drawn up that the material made under it is suitable for the service required, we come to the necessary details that should be embodied.

First: Design or size of material.

This is almost entirely within the hands of the consumer and is of course linked closely with the grade of steel specified.

Second: Grade of material.

Here we must have all the information that is available as to past performance of our own or others, together with our knowledge of the properties of steel under various heat treatments. Under this heading the first consideration should be given to—

(a) Physical properties; and if necessary, to
(b) Chemical properties.

Too much emphasis cannot be given to the fact that it is the physical result we are all looking for and not the composition. If a piece of steel has the necessary hardness, strength and ductility, and is of the proper shape and size, we should not concern ourselves with how it is made or what it is made of. A steel of a certain chemical composition, of a certain size, given a certain heat treatment, has absolutely definite physical properties, so that in specifying the physical result desired we are indirectly specifying the chemical composition.

There is a great tendency in this country to specify not only a physical test, but a chemical requirement as well, with the hope that both requirements will coincide.

During the war it was very interesting to note that our foreign allies had in their specifications very little reference to chemical composition, and placed very little importance on what few chemical requirements they did have, but when they began to place orders in this country they reluctantly added to their specifications a chemical requirement, thinking that the American manufacturers wished both requirements.

It is needless to state that the manufacturers worked to the original specification which required rigid physical properties with very little reference to chemical limits.

This one feature of the foreign specification made possible the enormous tonnage of steel of all grades supplied to our Allies and this steel met the severe war service satisfactorily.

In many cases it is desirable to buy steel on chemistry

*From a paper presented before the January 13, 1920, meeting of the New England Railroad Club.

alone, but when a physical requirement is specified, it is rarely necessary to include any chemical requirement except, perhaps, the maximum phosphorus content, and in rare cases the maximum sulphur content.

Phosphorus and sulphur have generally been considered impurities in steel, and due to the fact that our raw materials in this country permitted the manufacture of steel lower in these two elements than has ever been possible abroad, there have crept into our specifications very rigid requirements as to the maximum contents of these two elements. Investigations of failed material have often shown that it contained slightly higher percentages of these elements than was, in the minds of some, a safe limit, and the conclusion was immediately made that these percentages were the cause of the failure.

The study of material that has been in service is undoubtedly the most prolific source of information on which to base our specification, but this study should be made with equal zeal on material that has given satisfactory service as well as on material that has failed. No one phase of so-called scientific work is being carried on in such a misleading, unscientific and unintelligent manner as the investigation of failed material. If any member fails before others, used in apparently similar service, or sooner than it should in the opinion of the user, the first step in an investigation is a chemical analysis made from drillings taken near the fracture, but more often away from the break. This is followed by a tensile test made from a specimen cut at a convenient location, and to lend a more scientific tone to the report, a few microphotographs are made. If the phosphorus or sulphur are three or four one-thousandths of one per cent higher than was specified, or the elongation one per cent less, or the microphotographs show non-metallic impurities, or a grain size that appears large to the observer, the steel is condemned on one or all of these accounts.

The fact that the failed member may have been injured by receiving abnormal treatment at some period of its life, been improperly machined or fabricated, or of the wrong design or size, is almost always absolutely ignored, while a careful examination of the fractured member and the history of its use will many times give us the true cause of the failure. A report of this nature will not be so impressive, but the conclusion will be nearer the truth.

The scarcity of the high-grade ores and low sulphur fuels prevents the manufacturer to-day from producing the extremely low contents of phosphorus and sulphur sometimes required. Extensive investigations have been made and are now being made to show the effect of different percentages of those elements. We find that phosphorus is not an element that produces brittleness, as has usually been the consensus of opinion, but a hardener more intense than the carbon, but acting in the same manner. In other words, we can use higher phosphorus steels if we compensate for this hardness by a reduction in the carbon content.

As to sulphur, we are very thoroughly convinced that in almost all cases, even in such steel as rivets, which would show the effect of hot brittleness the quickest, steel with sulphur much above the present standard requirement gives satisfaction in every respect.

Much tradition and mystery surrounds the effect of small percentages of these so-called impurities. Even in the comparatively few years that I have been in the steel business, I have seen the situation in regard to copper change from one where material was rejected if it contained five hundredths of one per cent of copper, to its being specified in the steel.

There is nothing mysterious in the steel business. There is a lot that we do not know, and not a day passes that some new phase does not present itself, but it is only by keeping an open mind and continuing our investigations that real constructive progress is made.

After the design, size and shape of the material and the physical properties or chemical requirements, or a reasonable combination of both, are specified, sufficient tests of a suitable nature should be required. Many times we find that parts subjected to abrasion only are bought on a tensile requirement, so here again we must keep in mind the ultimate use of our product. Rolling tolerances should be stated clearly in a specification, but clauses as to length, percentage of second-quality material accepted, et cetera, would best be part of the contract.

The ideal specification from the standpoint of the customer is the clear, concise, brief specification executed by an inspector who has sufficient knowledge of the ultimate use of the material to intelligently interpret the specification.

It must be remembered that no specification can be drawn up which, in the hands of an inspector who knows nothing but what is written in this specification, will deliver accepted material that will be satisfactory to the user.

American purchasers of steel are sorely in need of capable inspectors. Not a greater number of inspectors, but better inspectors.

This is one of the main reasons why foreign work is so attractive to American steel manufacturers. Practically all of the foreign inspectors are men well versed in the ultimate use of the material and the limitations under which it is used, together with a wide enough training among the many steel plants to appreciate the possible limits of manufacture. A man so trained does not penalize a steel plant and protects both the purchaser and manufacturer in that the material accepted by him will be satisfactory for use in the service for which it is intended.

The "radicals" or "left wing" among the "specificationists" have recently gone to the extreme of not only specifying the grade of steel required with the necessary test, but of specifying in detail how the manufacturer shall proceed to make this steel, together with a rather crude description of some of the various manipulations which have been regular practice among steel manufacturers since the time when steel was first cast into ingots.

It is their contention that a specification of this kind instructs an inspector as to the correct method of manufacture, and thus insures that the material accepted by him will be far superior to that bought under a specification that omits these instructions.

Sight is lost of the fact that no person can learn any trade from a text-book, and what may be considered good practice today may be poor practice tomorrow, and that the manufacturer may be so hampered in his operation by an inspector who interprets these clauses to suit his own whim that you cannot reasonably hold him responsible for the resulting product. It is not fair to specify how a man shall make his steel and then hold him responsible for the quality.

To summarize:

First: The grade of material specified should be that which experience has shown is satisfactory in service.

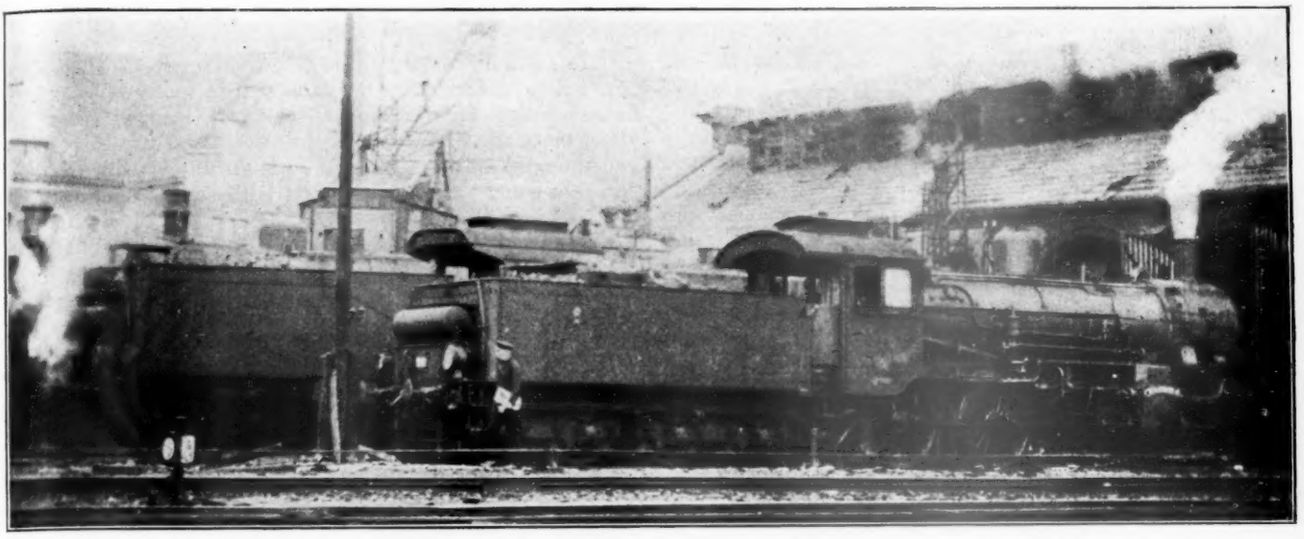
Second: Draw up your specification so that for important parts, high-grade material is required, and for parts of lesser importance steel of lower requirements, keeping in mind that it is our duty to make an economic use of steel.

Third: Turn a deaf ear to the traditions on the mysterious, disastrous effect of small percentages of various elements in steel.

Fourth: Confine your specification to a brief statement of the grade of material required, omitting those clauses that are primarily a part of the contract.

Fifth: Place your specification in the hands of a competent inspector who has some authority other than that written in the specification.

Sixth: For your own protection and peace of mind, do not tell the manufacturer how to make your steel and then try to hold him responsible for its behavior in service.



Engine Shed at Dusseldorf

Germany's Economic Position as a World Nation*

Labor Insurgency and a Weak Government Have Made Its Industry and the Railroads Impotent

By Robert E. Thayer

European Editor of the *Railway Age*

Part II—The German Railways

THE RAILWAYS OF GERMANY have suffered physically to a greater extent than any other industry. This has been particularly noticeable since the signing of the armistice. Whereas during the war there was a shortage of freight cars due to the fact that the Germans had some 10,000 additional miles of track to operate in their occupied territory, the real difficulty experienced now is in a shortage of locomotives. This shortage is due not to a lack of numbers, for Germany today has more locomotives than it had before the war, but to the fact that a very great proportion of them are out of service for repairs.

Condition of Roadbed

To a passenger traveling over the German lines, the roadbed appears to be in a good condition considering the fact that it was put to such a severe test during the war and that it has been difficult, on account of labor troubles since the war, to do much work upon it. The German roadbed is well ballasted. Steel ties are used to a great extent and rails of 82 and 90-lb. per yard are used. The ballast is generally of basalt or basalt-lava, which is 12 to 16 in. deep below the top of the steel ties. An inspection made of the German lines directly after the signing of the armistice disclosed the fact that on certain portions of the line, particularly those which had been subjected to very heavy traffic, the track bolts which fasten the rails to the steel ties and the bolts in the fish-plates were loose, but regardless of this defect the trains rode well. This fact speaks well for the type of roadway used by the German railroads. Conditions were favored, however, by the fact that the maximum allowable axle loads are not excessive. On some of the heaviest locomotives the axle load does not exceed 18,000 lb.

Condition of Equipment

The passenger equipment used on the German roads is in good operative condition but its finish and upkeep is deplorable. The cars are dirty inside and out. There is practically no plush or velvet remaining in any of the cars and the passengers have to remain content to ride on cushions covered with a dirty buckram which has become shiny from use. Many of the windows, which are of the drop sash type, are in an inoperative condition due to the fact that the leather straps have been removed. Upon inquiry regarding this condition of affairs it was stated that at one time there was such a severe shortage of leather and cloth in Germany that even passengers, let alone thieves in the car yards, would cut away the seat coverings and all other such material from the cars for their individual use. Stealing has been exceedingly prevalent. In 1919 tools and material to the value of 5,000,000 marks were stolen from the railway shops.

Heavy Deficits in Operation

The financial condition of all German roads is extremely serious. While it was impossible to obtain detailed information regarding all of the roads, an idea can be obtained of their condition from the Prussian-Hessen system, which is by far the largest system in Germany. From the year 1910 to the year 1917 inclusive, this system paid dividends to the state, according to its method of accounting, as shown in the table below:

1910	6.48 per cent	1914	3.59 per cent
1911	7.20 per cent	1915	5.57 per cent
1912	7.17 per cent	1916	6.24 per cent
1913	6.39 per cent	1917	4.03 per cent

In contrast to the above particularly good record, there was a deficit or rather, it was necessary to draw from the Prussian State 1,229,841,000 marks with which to meet the expenses of railway operation in 1918, and in 1919 the deficit

*This is the second of two articles written by Mr. Thayer from recent observations in Germany. The first appeared in the *Railway Age* of April 9, page 1135.

rose to 1,892,000,000 marks. If to this is added the amount usually paid for the amortization of the railway debt, the deficit in 1918 would have been 3,800,000,000 marks and in 1919 it would have been 4,600,000,000 marks. For the year 1920 there will be a further burden of some 2,000,000,000 marks in increased wages which were awarded recently in order to forestall a strike. In order better to meet the greatly increased cost of operation it has been decided to bring all the railways in Germany into one large state company thus uniting the Prussian-Hessen system which operates about three-quarters of all the railway mileage in Germany with the Bayern, Sachsen, Wurttemburg, Baden, Oldenburg and the Mecklenburg-Schwerin systems. It was expected that this amalgamation would take effect on April 1 of this year, but as this is written no definite plan of action had been evolved.

Rate Increases

With such deficits it is apparent that the revenues must be increased and on March 1, of this year, a 100 per cent increase was made in both passenger and freight rates, so that at the present time the freight rates have been increased by some 800 per cent and the passenger fares by some 700 per cent above the pre-war rates. This is a fine commentary on the statement of the Prussian Minister of Finance who in 1917 said, in connection with a relatively small increase in rates put into effect at that time: "The new raising of the railroad rates is only temporary; we hope to abolish them after the war." There have been four distinct increases in

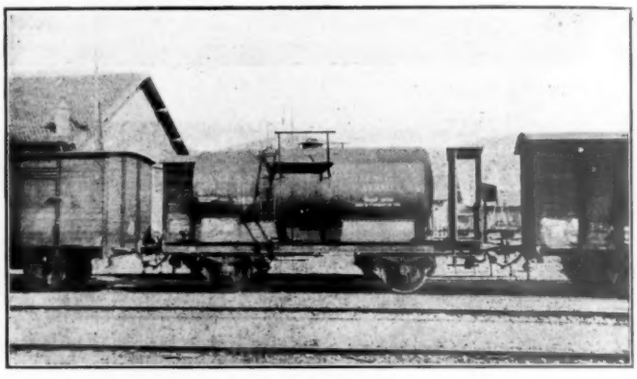
German Locomotive Equipped with Knorr Feed Water Heater

the passenger fares, the first amounting to 20 per cent, the second 100 per cent of the new rate. This was then increased 50 per cent on March 1, 1918, and this new fare doubled on March 1, 1920, so that a ticket costing 21.20 marks in pre-war days now costs 153.60 marks.

Traveling Conditions

Under such conditions it may readily be appreciated that traveling conditions are not of the best. With the shortage of locomotives, with locomotives in poor operative condition and having to contend with a very poor grade of coal, the trains are crowded and most always late. There are fourth class passenger cars in Germany; these present a most disconsolate picture on some of the through heavy services. They are crowded to the doors. They consist principally of compartments about 8 ft. wide and 10 or 12 ft. long with benches along the walls of the compartments. These are soon filled and the open space in the middle is also filled with German peasants going to or from market with all the supplies that they are strong enough to carry. As a result, these compartments are so crowded that it is all but impossible to close the doors.

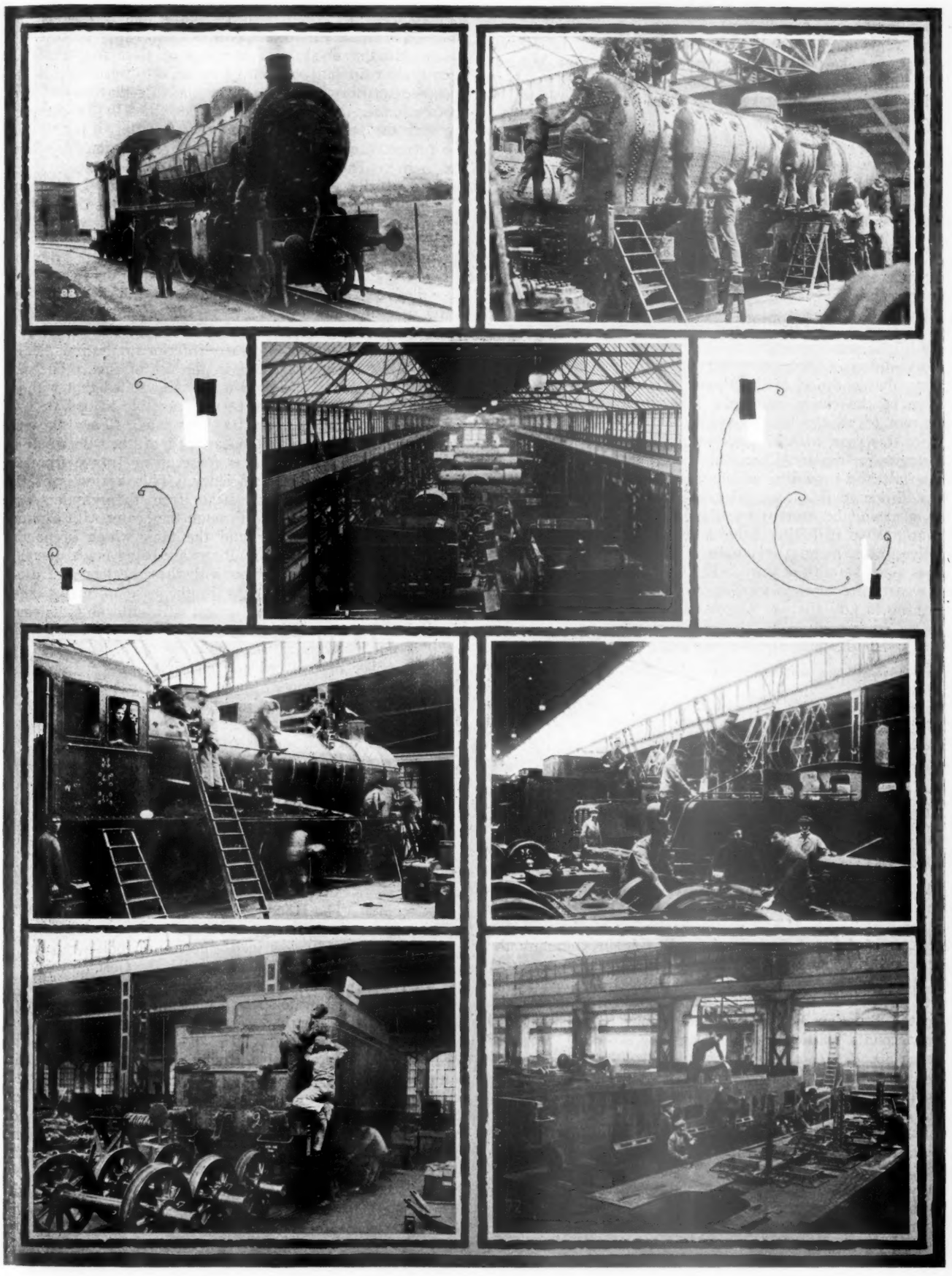
Nor is there much more comfort in some of the better class compartments. In a ride from Dusseldorf to Cologne, in one second class compartment scheduled to hold six passengers there were 15. The train schedules have been lengthened, the maximum speed being about 30 m.p.h., and at the same time the number of trains reduced. Practically no trains run



A German Tank Car

on Sundays. Between Berlin and Cologne a distance of 362 miles, there were before the war 15 trains each way which took 8½ to 9 hours to make the journey. Early in 1918, there were 9 trains for civil passengers and 4 trains for the military on leave and the trip took 11 hours. Now there are only 8 through trains operating between these points, which, by the way, handles the heaviest passenger traffic of any line in Germany, and the fastest scheduled running time is 12 hours although the actual time is frequently between 13 and 14 hours.

Because of the smaller number of trains it is exceedingly difficult to provide the necessary accommodations for first and second class passengers, but this is very adroitly overcome by the resourceful German trainmen. One amusing instance will serve to indicate the methods followed. At the originating terminal where it appeared there would be a shortage of first-class compartments, a trainman simply changed the number on the door of a second-class compartment from "2" to "1" and a first-class passenger entering this particular compartment felt quite contented to think he had a first-class seat. A little further along the line, however, the number of second-class passengers increased and overflowed into his compartment regardless of the fact that it was marked "first." The ticket collector on finding that the majority of passengers in this particular compartment were traveling second-class calmly changed the number of the compartment back to "2." The first-class passenger noticed this and immediately raised the point that in as much as he had a first-class ticket he was entitled to a refund. After some talk, the trainman again changed the number of the compartment back to "1" thus removing all points of argument from the dissatisfied first-class passengers. As a matter of fact one has to be content with any seat on the German trains regardless of the compartment in which he rides and of the ticket which he holds.



Photos from Keystone View Company

Repair Work on German Locomotives

Coal Situation

The German railroads have suffered from the lack of fuel in the same manner as all Germany. In pre-war days it was the custom to keep 90 days' supply of coal in storage, but now it is difficult to get a supply of more than three or four days. A few figures are given below to show how the quantity in storage has decreased:

December,	1913	3,000,000 tons supply
November,	1918	1,431,000 tons supply
December,	1919	190,000 tons supply
February,	1920	100,000 tons supply

In addition to this the coal is of a very inferior quality and where the standard consumption was about 15 tons per 1,000 kilometers it is now between 20 to 25 tons. Because of the severe shortage of lubricating oils it has been necessary to extract the coal tar products from the coal, leaving the coke for locomotive use.

Locomotive Situation

While it was impossible to obtain detail figures regarding the condition of locomotives for the entire railways of Germany, the condition of the Prussian-Hessen system is indicative of the entire country. The system owns about 81 per cent of all the locomotives in Germany. On January, 15, of this year, over 47 per cent of its locomotives were out of service for repairs. There has been difficulty in obtaining materials and providing adequate labor to make the repairs. In addition to this, as in the case of the "one hoss shay," the effects of the wear and tear on the power during the war began to show in 1919. Table I showing the number of locomotives owned and the number in bad order at different times since before the war, indicates the condition of affairs as regards locomotives in Germany. It is particularly interesting to note that on August 1, 1914, the Prussian-Hessen system owned 21,882 locomotives and on February 12, of this year the total number was 23,224.

TABLE 1—CONDITIONS OF LOCOMOTIVES ON THE PRUSSIAN-HESSIAN SYSTEM

Date	Locomotives owned	Percentage in bad order
1910	19,670	....
1911	20,187	....
1912	20,758	....
August 1, 1914	21,882	19.5
November 1, 1918	27,991	33.5
March 30, 1919	22,538*	43.2
September 3, 1919	23,248	44.6
January 15, 1920	23,956	47.2
February 12, 1920	23,224**	46.2

*After locomotives were delivered to the Allies.
**After locomotives were delivered to Poland.
NOTE.—Germany has still to deliver 280 locomotives and 2,000 cars to the Allies under the terms of the Armistice. The Prussian railways now have on order some 1,500 locomotives.

It will be seen that before the Armistice was signed (November 11, 1918) the Prussian System had 27,991 locomotives as compared with 21,882 at the beginning of the war—an increase of 6,109. For all the railroads in Germany the increase in locomotives owned was 6,648 (about 24 per cent) or a total of 34,570 on November 1, 1918. Of the locomotives turned over to the Allies under the terms of the Armistice the Prussian system furnished about 83 per cent and this accounts for the drop between November 1, 1918, and March 30, 1919. There is a further drop between January 15 and February 12 of this year of some 734 locomotives which is accounted for by the fact that at that time Germany was required to turn over a large number of locomotives to Poland.

The fact that Germany has more locomotives today than she had before the war, regardless of the fact that she had already turned over about 5,000 to the Allies, is accounted for by the intense locomotive production during the war. The locomotive manufacturing plants were called upon to do nothing else but build locomotives. Each plant was given a specific design to build and turned that design out in large numbers. Practically all of the locomotives built were of a heavy and most improved design. Railway locomotive shops have been particularly hard hit as regards labor and it is on account of the greatly reduced output that it has been impossible to repair the locomotives as fast as they become disabled. In the unoccupied territory of Germany there has been greater difficulty in getting the men to work than in the occupied territory as is shown by the fact that of the locomotives under the jurisdiction of the Allies in the occupied territory the percentage in bad order is only 32 per cent at the present time. Detailed statistics are notoriously lacking but from general observation it can be said that those locomotives which were under operation were in good condition. There were a few cases of bad steam leaks noticed but there was not much evidence of defective machinery.

Modernizing Railway Equipment

One extremely interesting fact in regard to the locomotives was the very large number of feedwater heaters that are being used in Germany today. With coal at 200 marks a ton as compared with 12.50 marks before the war and furthermore with a coal of a greatly inferior grade, it is necessary to exert the greatest care in the use of fuel. The mechanical engineer of the Prussian system stated that without these heaters it would have been impossible to operate and meet the requirements as well as they have. They not only saved fuel but increased the capacity of their locomotives to the extent that their claims for economy range from 20 to 25 per cent in overall efficiency. This heater is of the tubular type, taking exhaust steam from the cylinders and auxiliaries. Water is forced through the heater with a pump located between the heater and the tank which keeps the heater under boiler pressure. Plans are being made to equip all of the Prussian locomotives with these heaters regardless of their size and service. As in the case of many other European roads the Prussian system will build no more compound locomotives. With superheaters and feedwater heaters it is felt that compounding is unnecessary.

The number of bad order locomotives has been so great that the railway locomotive shops were incapable of handling them. The extremely low morale of the men has reduced the output tremendously and furthermore the Prussian system now has only 60 large central repair shops whereas before the war it had 70. Everywhere throughout Germany one will find the railway equipment being repaired in plants capable of handling such work. The ship yards which are now practically devoid of shipwork have turned their energies to the repair of railroad equipment. The North German Lloyd at Hamburg is doing practically no other work than repairing railway stock. It is concentrating chiefly on car repairs but also has 14 locomotives in its shops for heavy repairs. The Hanover Locomotive Works has 50 locomotives to repair. Krupps has already repaired 300 locomotives and has 150 now in its shops undergoing repairs.

As indicated by the manner in which the German railways are applying feedwater heaters to their locomotives, the officers are not hesitating to spend money in order to save money regardless of the fact that the roads are now being operated under such heavy deficits. In addition to improving the locomotives a very extensive program is being carried out in equipping the freight cars with Kunse-Knoer automatic air brakes. This is a compressed air brake which is standard on the Prussian system. A program involving the expenditure of 260,000,000 marks for this purpose has been started. One third of the existing cars on the Prussian system, or about 175,000, have been equipped with this brake and all new cars will be. By 1927 it is planned to have all the freight cars on the Prussian system equipped. It has been estimated that at the end of ten years a saving of 60,000,000 marks will be obtained, after having paid for the cost of the installation, as a result of the saving in wages of the train crews alone. This brake is of a relatively new design and operates on a principle similar to the Westinghouse brake.

The continental roads before the war endeavored to come to some arrangement for the application of a standard brake to all freight cars in order to facilitate the interchange of traffic. The problem at that time was whether the vacuum or compressed air brake should be used. Strangely enough the strongest advocates of the vacuum brake were to be found in Austria and even during the war, tests and negotiations were carried on between the Austrian and the German roads in an attempt to settle the matter between themselves, but the unsatisfactory closing of the war to those countries prevented an agreement being reached and it appears that by this extensive application of power brakes to the Prussian road, an attempt is being made to force the compressed-air brake on all other nations in Central Europe if they want to participate in the exchange of equipment with the German lines. While the use of automatic couplers is greatly desired to replace the screw couplings on freight cars, plans have not been developed sufficiently to permit of any definite action in this respect.

Germany's Position as to Exports

This outline of Germany's industrial and transport situation will give a good idea of the present possibilities of Germany for exporting its manufactured products. With the internal dissension her hands are tied. With the great reductions in her supply of raw materials her power is restricted. With a loss of her merchant marine she must rely on other nations for transport. And with the work that is yet to be done within her own borders, she will be kept busy for some time to come. But the salvation of Germany's industry and the salvation of her economic position amongst the nations of the world demand that she export all she possibly can.

While the picture painted in this article shows Germany in a decidedly weakened and impotent state, the fact must not be lost to sight of what Germany was before the war and what it did during the war. Germany still has the equipment and talent for big business and whenever its internal affairs become settled it will be a nation to be reckoned with in the world's business. It is looking to Russia for its start and Russia—when *its* internal affairs become settled—will be the greatest market the world has ever seen, particularly for railroad equipment which Germany is preparing to supply.

The freight car builders of Germany have already joined together in an association known as the Verband Deutscher Wagonfabriken, which is similar to the Railway Car Manufacturers' Association in the United States but with far greater powers and more executive authority. Every car manufacturer receiving an order for equipment must communicate with the head offices of this association, which is located in Berlin, and receive the approval of the association on the price he desires to charge for the equipment and must also receive permission to undertake the work. Similar organizations will undoubtedly be formed and export business will be handled not as individual enterprises but as national combinations.

More Equipment Needed.—Industry continues to be hampered by inefficient transportation. This is not a condition which can be materially aided by redistribution of cars, but can be remedied only by the purchase of a large amount of new equipment and the heavy repairing of old. Although a number of railroads are now in the market for rails, cars and locomotives, the buying movement has not yet reached large proportions. Extensive purchases on the part of the roads must wait the making of adequate financial plans. Some needs, however, such as the requirements of the repair shops, are so urgent that buying of this kind cannot long be postponed.—*National Bank of Commerce in New York.*

February Returns Show Large Deficit

Washington, D. C.

Railroad earnings and expenses for February, the last month of government operation, made the worst showing of any of the 26 months during which the Railroad Administration was in charge, according to the preliminary bulletin issued by the Interstate Commerce Commission covering the reports of all roads that earned over $25,000,000 gross in 1919, or 80 per cent of the revenues of all Class I roads. These roads not only failed to earn anything toward the $75,000,000 a month rental guaranteed by the government but had an actual operating deficit of $8,654,313 and it is understood this deficit will be increased when the complete statement is issued.

This is the third month in which the railroads under federal control failed to earn any of the rental. In January, 1918, the first month of government operation, there was an operating deficit of $3,288,205. In June, 1918, there was also an operating deficit of $63,326,726 but this was caused by the fact that five months of retroactive wage increases ordered by Director General McAdoo were charged to the June accounts. The February, 1920, showing is largely attributable to the effects of severe winter weather on the Eastern roads, as the Eastern roads included in this bulletin earned $24,263,163 less than their operating expenses, while the Southern roads had a net operating income of $5,594,659 and the Western roads earned $10,014,191. The 45 roads covered by the bulletin had total operating revenues for February of $340,660,620, an increase of $56,000,000 as compared with February, 1919, but their expenses were $331,460,846, an increase of $72,000,000.

The fact that the rental paid for the use of the railroads by the government for each month was one-twelfth of the standard return based on the average net operating income for the three years ending June 30, 1917, works out very favorably for the railroad companies for the two months of 1920 during which the railroads were operated by the government. The average January net operating income during the test period for the Class I roads was $56,613,000 and for February the average was $47,934,000 so the government guaranty for the two months of $75,000,000 gives the railroads about $45,000,000 more than they earned in the corresponding months of the test period.

For the six months, March 1 to August 31, during which the government is to continue the guaranty, the $75,000,000 a month average works out as about $3,000,000 less than the average net for those months in the test period but this year the railroads should get the benefit of the larger earnings of the last four months of the year which were used by the government, when it had a full year to go on, to offset the unfavorable showing of the earlier months. For September of the test period the standard return for the Class I roads was $91,273,000, for October it was $94,333,000, for November it was $83,536,000 and for December it was $73,282,000. The guaranteed rental, under the terms of the standard contract, was to be paid in equal quarterly instalments and pro rata for any fraction of a year. For the six-months period, however, the amount of the monthly guaranty will be reduced by about $5,000,000 or $6,000,000 by the fact that some 40 roads did not accept the guaranty.

With constant demands for increased wages on the part of their employees on the one hand and an incessant clamoring of the public for lower passenger and freight rates on the other, it has thrown our greatest agencies for progress and development in a precarious condition. It is high time that we show a more liberal spirit toward these public servants and give them that support and co-operation that will enable them to better serve the public.—*Vidalia (Ga.) Advance.*

Railroad Labor Board Appointed

PRESIDENT WILSON on Tuesday sent to the Senate for its confirmation the appointments of the nine members of the Railroad Labor Board, provided for in Section 304 of the transportation act, which is to have jurisdiction over disputes between railroads and their employes and which is expected to give early attention to the present situation caused by the unauthorized strikes in various parts of the country. The board is composed of three representatives of the public selected by the President, three representatives of the railroad companies selected by him from six names nominated by the Association of Railway Executives, and three representatives of labor selected by the President from 10 nominations by the principal railroad labor organizations. The board is to select its own chairman and secretary and is to have its headquarters at Chicago, although it is authorized to hold meetings elsewhere. The members appointed by the President are:

Public Group: G. W. W. Hanger, assistant commissioner of the United States Board of Mediation and Conciliation; Henry Hunt, former mayor of Cincinnati and a member of the board of trustees of the Cincinnati Southern; and R. M. Barton of Memphis, Tenn., a former member of the Tennessee court of appeals.

Management Group: Horace Baker, former general manager of the Cincinnati, New Orleans & Texas Pacific; J. H. Elliott, former general manager of the Texas & Pacific and later a colonel in the Transportation Corps, A. E. F.; W. L. Park, former vice-president of the Illinois Central and later vice-president and federal manager of the Chicago Great Western.

Labor Group: Albert Phillips, vice-president of the Brotherhood of Locomotive Firemen and Enginemen; A. O. Wharton, president of the Railroad Employes Department of the American Federation of Labor and formerly a member of the Board of Railroad Wages and Working Conditions of the Railroad Administration; and J. J. Forrester, president of the Brotherhood of Railway and Steamship Clerks, Freight Handlers and Express and Station employes.

Messrs. Barton, Phillips and Baker are appointed for a term of three years, Messrs. Hanger, Wharton and Elliott for two years, and Messrs. Hunt, Forrester and Park for a term of one year.

The nominations were at once referred by the Senate to the committee on interstate commerce and the committee promptly held a meeting for the purpose of considering its recommendation as to confirmation but it was decided to ask further information regarding the members of the public group. The Senate committee held another meeting Wednesday and recommended confirmation of appointments, but some opposition to Messrs. Hanger and Hunt developed during executive session of Senate and action was postponed.

Mr. Hanger has had an unusually broad experience in dealing with labor and wage matters during his service with the United States Board of Mediation and Conciliation, to which he was appointed in 1913 by President Wilson. He was formerly chief statistician of the Bureau of Labor Statistics. During federal control of the railroads he was an assistant to the director of the Division of Labor of the Railroad Administration. The other two representatives of the public on the board have not been identified with railroad labor questions.

The three representatives of labor on the board are entirely familiar with the questions to be handled by the board, both through long experience as labor leaders and because of their connection with the wage propositions which were submitted to the Railroad Administration and are still in an unsettled state. Mr. Wharton has been a member of the Board of Railroad Wages and Working Conditions, which has investigated all wage questions for the Railroad Administration since the issuance of General Order No. 27 in May, 1918, and, under the practice of that board of alternating the chairmanship between the representatives of the management and of the labor organizations, he has twice been chosen as chairman.

Mr. Baker had been general manager of the Cincinnati, New Orleans & Texas Pacific, with ocffie at Cincinnati, from 1906 to March 1, 1920. He entered railway service as a clerk in 1878 and had later been chief clerk, trainmaster, local freight agent, division superintendent, assistant general superintendent and general superintendent. Mr. Elliott began railway work as a messenger and was later an operator, despatcher, chief despatcher and trainmaster. Subsequently he was employed on the Texas & Pacific, the St. Louis & San Francisco and other roads in various capacities in the construction and operating departments. In 1914 he was appointed inspector of transportation of the Texas & Pacific and later he was promoted to superintendent, general superintendent and general manager. Mr. Park has also come up through the ranks and has had a great deal of experience in labor matters on both the side of the employees and on the side of the management. He entered railway service in 1875 as brakeman on the Union Pacific and was later freight conductor and passenger conductor, serving as chairman of the grievance committee for the conductors for a time. In 1900 he was appointed division superintendent and later general superintendent of the Union Pacific and in March, 1910, he was elected vice-president of the Illinois Central. In October, 1917, he was granted leave of absence by the Illinois Central for the duration of the war and was made first vice-president of the Chicago Great Western, later being appointed federal manager. He was a member of the board of arbitration that passed on the wage demands of the western enginemen and firemen in 1915.

Members of the Railroad Labor Board are to be paid salaries of $10,000 a year.

The board is directed by the law to hear and decide any dispute involving grievances, rules or working conditions in respect to which any adjustment board fails to reach a decision within a reasonable time, or, if no adjustment board has been organized, upon the application of the chief executive of a carrier or of a labor organization or of 100 unorganized employees, or upon its own motion if it is of the opinion that the dispute is likely substantially to interrupt commerce. It is also directed to receive for hearing and to decide disputes with respect to the wages or salaries of employees or subordinate officials and in case of a voluntary agreement the board may suspend the operation of the decision reached for its own review, if it is of the opinion that the decision involves such an increase in wages or salaries as will be likely to necessitate a substantial readjustment of rates. Decisions by the board require the concurrence of at least five of the nine members and in cases involving wages or salaries at least one of the representatives of the public must concur.

In addition to the settlement of disputes the board is directed to investigate and collect data pertaining to the relations between carriers and their employees.

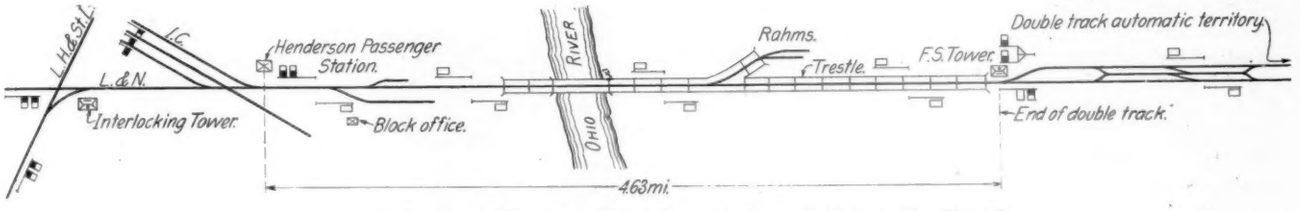
THE CINDERELLA OF AMERICAN POLITICS.—For a number of years the railroads have been the Cinderella of American politics. They have been kicked around, demagogues have delighted to seek political profit at their expense. Even politicians who are sane enough on other points were unable for a long time to see why the railroads should not constantly pay increased wages and increased prices for materials, while charging the old rates for hauling passengers and freight. It was a pretty game, while it lasted. But the time has come when the country, for its own sake, will have to give the railroads something like fair play.—*Cincinnati Times-Star.*

Single Track Operation Without Train Orders

A Busy Stretch Operated By Signal Indication By the Installation of a Traffic Locking Scheme

By F. H. Bagley
Asistant Signal Engineer, Louisville & Nashville, Louisville, Ky.

THERE IS A GROWING INCLINATION among railroad officers to consider methods of operating trains by signal indication instead of by written orders. Where traffic is congested this plan presents attractive possibilities in saving delays, increasing the capacity of the track and in reducing operating expenses. Train operation by signal indication was established in October, 1919, on a very busy stretch of single track between Henderson, Ky., and FS Tower, Ind., on the Henderson division of the Louisville & Nashville. At Henderson a mechanical interlocking controls the junction of the Louisville & Nashville, the Louisville, Henderson & St. Louis, and Illinois Central, and the traffic from all three roads is sent over this single track to Evansville, Ind. The double track from Evansville ends at FS Tower, which controls the southbound traffic to the single track towards Henderson. This stretch of single track is approximately 4½ mi. long and is on a trestle across the low flat lands bordering on the Ohio river at this point. The crossing of the Ohio river is made over a single-track truss bridge, which is located just north of Henderson.



The Track Layout After the First Installation of Automatic Signals

How Trains Were Operated Formerly

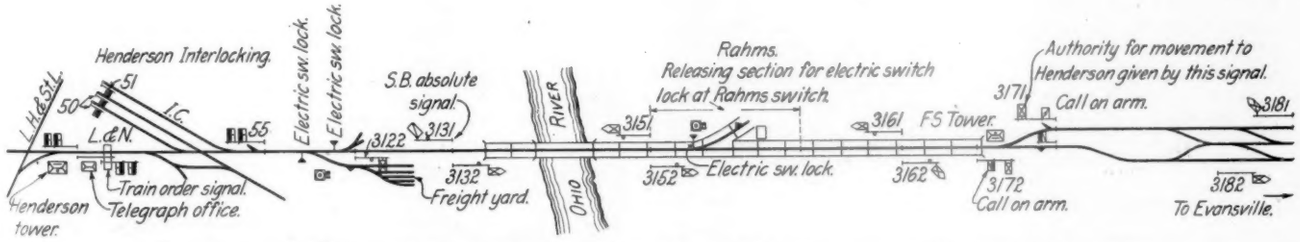
Automatic signals operating on the overlap scheme, together with a time block and written orders, have controlled the traffic over this track for the past eight years, and there was a very noticeable increase in track capacity after the automatic signals were first installed. The traffic increased to such an extent as to make it necessary to further increase the capacity of the track or resort to the only other alternative — double track. As a double-track trestle of such proportions would be very expensive, other means were considered.

The track layout after the first installation of automatic signals is shown in the diagram. The block was handled by the telegraph operators located at FS Tower and at Henderson. The operators at Henderson are located in a small office adjacent to the interlocking tower. The operators at this telegraph office were provided with a train order signal with which to govern the trains, while the operators at FS Tower controlled movements to the single track by means of the southbound interlocking home signal.

The scheduled traffic between Henderson and FS Tower is 24 passenger and 22 freight trains a day. A considerable number of extra passenger and freight trains are run daily, however, and the actual daily traffic lately has averaged 26 passenger and 48 freight trains. Restricted speed rules are in effect over the bridge and trestle, which tend to aggravate the conditions prevailing. The despatchers have frequently been required to issue an average of 50 train orders for each 24-hour period. As a rule there was an average delay of 14 minutes to each southbound freight train and a delay of 12 minutes to each northbound freight. The delays to some of the trains were, of course, less than the stated average, while others were greater and quite serious, tending to disorganize the regular schedules.

In order to expedite movements and save delay at either Henderson or FS Tower, the conductor of a freight train usually left the caboose in time to reach the head end as the engine neared the telegraph office on approaching the single track. This resulted in the saving of considerable time and oftentimes eliminated serious delays.

One great cause for delay was the fact that the I. C. and



Changes and Additions Made to Original Track Layout Showing Present Method of Operation

the L. H. & St. L. joined with the L. & N. tracks at Henderson and the traffic of all three roads between Henderson and Evansville was handled over the single track. As the L. & N. despatcher had no information about I. C. and L. H. & St. L. trains bound for Evansville until their arrival at Henderson, it was frequently necessary to change orders for freight trains at Henderson or at FS Tower because of the arrival of a superior I. C. or L. H. & St. L. train at Henderson. This delay, due to obtaining orders, was very objectionable, and it was realized that if such delays could be eliminated train movements would be greatly expedited. It was evident that

some scheme of operation was needed that would decrease the delay at each end of the single track by providing means, if possible, to allow trains to enter the single track without stopping.

Changes Made in Signal System

It was finally decided to install a traffic-locking arrangement between Henderson and FS Tower, to be handled by the telegraph operators located at these points. The operators were instructed to arrange with each other for movements over the single track, and when the route was set up for a movement in one direction a "traffic" lever in the interlocking machine would lock up the route so that the operator at the other end of the block could not set up the route for an opposing movement and vice versa. It was also planned, in addition, that trains would not be required to stop for orders, but could pass onto the single track by signal indication and be governed over it by the automatic signals.

The changes and additions made in the signaling arrangement are shown in the second track layout and were as follows: The automatic signals between Henderson and FS Tower were changed to operate in the upper quadrant and their control changed to the "Absolute-Permissive-Block" scheme, thus providing absolute protection for opposing movements and permissive protection for following movements. This change alone increased the capacity of the track considerably. The old interlocking arrangement at FS Tower was entirely rebuilt, making the protection complete and modern. This necessitated the building of a new tower and the installation of a new electro-mechanical interlocking, equipped with derails and semi-automatic home signals with calling-on arms. Route locking was also provided.

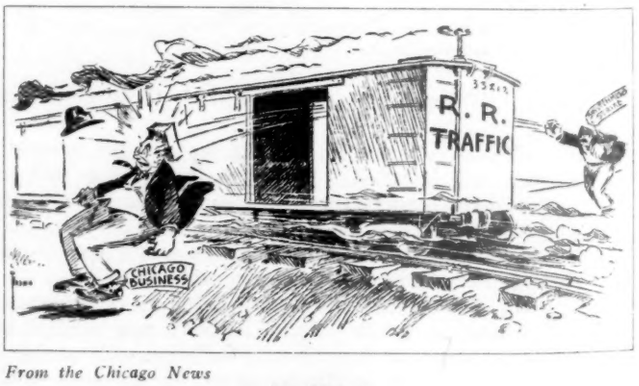
A two-lever set of interlocked circuit controllers was installed on the telegraph operator's table at Henderson. One of these levers controls the northbound absolute semi-automatic signal No. 3122 at Henderson. The other lever is used as the traffic lever and controls movements southbound from FS Tower. There is a traffic lever in the machine at FS Tower also to control movements northbound from Henderson. When the traffic levers are normal, it is impossible to clear the northbound absolute signal No. 3122 located at Henderson governing northbound movements to the single track, or to clear the southbound home signal at FS Tower, which is the southbound absolute signal governing southbound movements to the single track. However, if the traffic lever at FS Tower is reversed the lever controlling the northbound absolute signal No. 3122 at Henderson may be reversed and this signal cleared. When the traffic lever at Henderson telegraph office is reversed the lever controlling the southbound home signal at FS Tower — i. e., signal No. 3171—may be reversed and this signal cleared. In this way it is assured that the route can be given for one direction of traffic only. No additional operation is necessary for following movements, as these may be made according to the indication of the automatic signals. Trains proceed onto the single track on signal indication only, so that no time is lost in stopping for orders, as was formerly the case. An independent telephone circuit was installed between the Henderson telegraph office and FS Tower so that the operators could arrange for train movements. This line was made independent of all other circuits to prevent all chance of delay in arranging for these movements as would occur if other telephones were connected to the line.

As switching movements at Rahms Siding are such that the main track is cleared at times, an electric switch lock with a telephone was installed at this switch. This electric lock was wired so that it is entirely in the control of the operator at FS Tower. The switching at Rahms is done by a pusher engine which is regularly used to help southbound trains over the bridge, there being a steep grade southbound on the trestle approaching the bridge. This pusher engine on its return movement stops at Rahms to do any necessary switching. Before leaving FS Tower, the conductor of the switching crew advises the operator at FS Tower of the work he wishes to do at Rahms and the operator then arranges with the Henderson operator for the movement and instructs the conductor accordingly. Arriving at Rahms switch, the conductor telephones the operator at FS Tower, who then presses a button which unlocks the switch and enables the train to enter the siding. If the train entirely clears the main track and the switch is again set for the main line movement, the switch will automatically become locked. When the train is ready to come out the conductor of the crew must call FS Tower on the telephone and secure permission to do so. After the operator at FS Tower has arranged for the protection of the movement, he unlocks the switch by pressing the button, allowing the trainmen to throw the switch and come out onto the main track. The switch will be locked again automatically when it is set for the main line movement. If the trainmen should enter Rahms switch and leave the switch open it would be impossible for either the operator at FS Tower or at Henderson to line up for through movements.

The switches at Henderson leading to the freight house and to the freight yard, as shown in the revised layout, also are equipped with electric switch locks, the control of which is in the hands of the operator at Henderson. Switching movements are continually being made through these switches, and it was desired not to restrict these movements any more than was necessary. For this reason these switches are arranged to be normally unlocked, but will be electrically locked automatically when a southbound train comes within a certain distance of them. This distance is approximately 7,000 ft., which was considered sufficient because the southbound movements are slow up the steep grade approaching the bridge.

The switch locks used are equipped with a mechanical key release for use in case of failure of the electric control of the lock. The key release is kept sealed and the switchmen are governed by rigid rules regarding its use. Switch indicators are installed at the switch locks to give a visual indication to the switchmen when the switches are automatically locked. A bell, operating automatically, is also located at each of the two switches at Henderson, which gives an audible indication on the approach of a train. This enables the switching crews to clear the main track in time to prevent stopping through trains.

It was thought advisable to leave the train order signal in place at Henderson, as it gives the operator better control of a train in the event that it becomes necessary to stop it. Signal No. 3122 continues to be the leaving signal at Henderson. The signal arrangement as described was placed in service October 22, 1919, and seems to be meeting every expectation in facilitating the handling of trains and in eliminating delays.



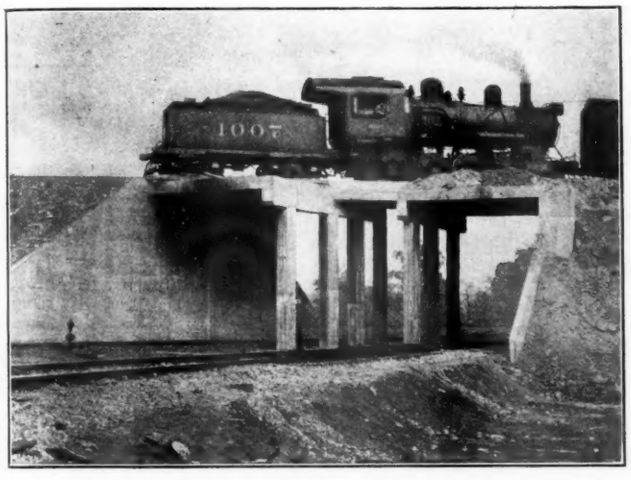
From the Chicago News

As Usual

Unique Design of Reinforced Concrete Wing Walls

Application of Cantilever Principle Effects Appreciable Economy in L. & N. Structures

THE ENGINEERS on the Louisville & Nashville like those on certain other roads which have made extended use of reinforced concrete have found that this material affords an unlimited opportunity for the exercise of originality in developing new designs for relatively simple structures. Thus in the design of wing walls for culverts and larger structures of the same type, the L. & N. has adopted the principle of cantilever support from the body of the structure. While this is a relatively simple matter in small culverts, the extension of this idea to larger structures with unfavorable conditions as to site and foundation has resulted in some rather unusual designs. While these seem rather bold, a study demonstrates that they represent much more economical solutions of the problems in hand than could be obtained by the adoption of more conventional designs.



A Novel Design for a Skew Undercrossing

In the design of wing walls for culverts this road has followed the prevailing practice on the small structures, of supporting the wings by building them monolithic with the barrel. In the larger structures the wing walls become so long that they cannot be designed economically as cantilever extensions on the barrel wall, so the designs used by most roads have embodied the use of self-sustaining and, in many cases, independent retaining walls. The engineers on the Louisville & Nashville, however, have hit upon another solution which is, in effect, an adaptation of the counterfort type of retaining wall with the difference that the counterfort extends underneath the wall and across the space between the two walls to form a sort of stiff yoke. This really acts in much the same way as an extension of the culvert barrel to the same point so that the wing wall beyond the yoke is designed in much the same way as the shorter wing walls of the smaller culverts. Between the yoke and the end of the culvert the walls are designed as continuous slabs. The cross wall of the yoke serves as a bulkhead or cutoff wall for the end of the culvert while the space between the wings and this yoke and the end of the barrel is paved with concrete.

As the wing walls are only 12 in. wide, they are not very heavy and in consequence it has been possible to eliminate the footings under these walls and support them by vertical cantilever action from the body of the structure. The tops of the wing walls have a slope of 1.6 to 1 in a direction at right angles to the track with the idea that the use of a slope flatter than that of the embankment material will afford a measure of protection for the embankment when the culvert is running full.

This same principle in wing wall design has been carried even further in the wing walls of highway underpasses like the one shown in one of the drawings. This provides an opening under the track 16 ft. wide by 12 ft. high. In these wing walls two yokes are provided instead of one and the inner yoke is transformed from a stiff U-frame to a complete rectangle by the addition of a strut across the top 12 in. by 24 in. in section. Such overhead struts or false parapet walls have been used previously, as, for instance, by the Chicago, Milwaukee & St. Paul as illustrated on page 1031 of the *Railway Age Gazette* of March 8, 1914. This feature is only possible in cases where the wings have sufficient height to afford adequate headroom under the strut. The unique feature in the Louisville & Nashville design is the use of the struts as a member of a stiff frame.

The wing walls of this structure are even thinner than those in the culverts, being only 10 in. wide, but they have been widened at the bottom to 16 in. by a 6-in. hub guard or fender projecting 9 in. above the roadway. As in the culverts, the footings under these walls have been dispensed with and the weight of the wall is carried partly by the cross walls of the yokes and partly by cantilever action from the barrel of the structure to which they are attached monolithically.

The Suspended Wing of the Railways Under Crossing

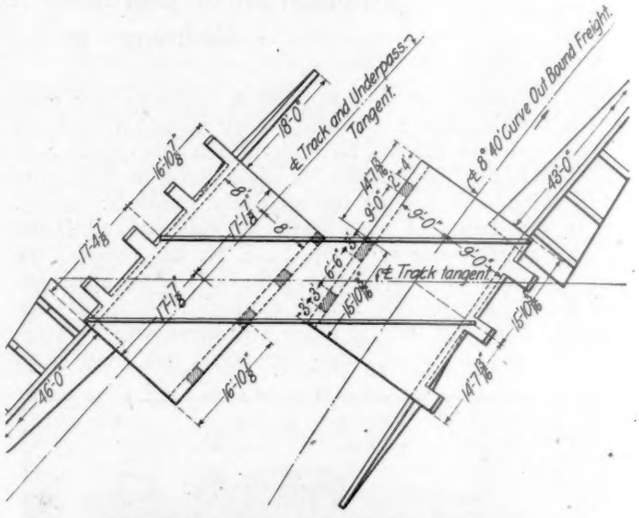
Another interesting feature in the design of this structure is the chamfering of the corner of the barrel wall where it joins the 30-deg. wing so that the angle of the barrel wall and wing is located 2 ft. 7¾ in. inside the barrel. To afford adequate support for the roadway slab overhead, the corner of this wall is bracketed out to the full width from a point 4 ft. below the soffit of the cover.

Another departure from common practice in this design is to be noted at the connection of the two wings at the op-

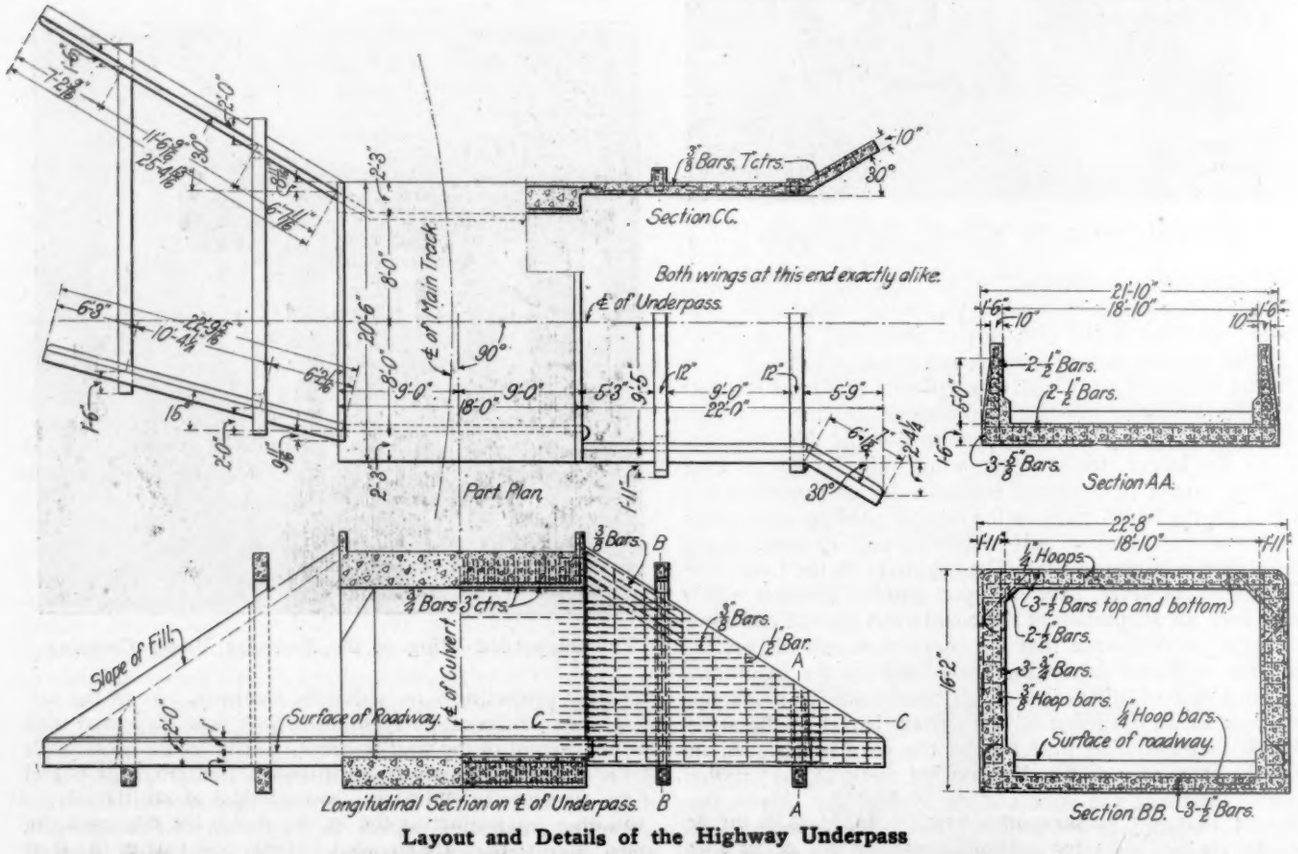
posite end of this structure which are parallel with the barrel walls. Instead of making the inside faces of the wings and barrel walls flush, the outside faces are flush and the resulting offset of 17 in. on the inside is protected by an extension of the hub guard beyond the end of the barrel. It is also to be noted that the barrel of the structure has a solid slab footing.

Having developed this type of design it was but natural to apply it in a more complex manner to a difficult piece of engineering encountered in providing a railroad undercrossing on a sharp skew. Foundation conditions required the carrying of the footings to rock at an elevation some 15 ft. or more below the rail level of the lower track, or 13 ft. below the level at which a retaining wall would serve any useful purpose. This condition led to the development of a design in which the floor load is transmitted by means of a transverse concrete girder to a row of reinforced concrete piers spaced from 7 to 10 ft. apart and extended to rock foundation. This same form of construction is used for both intermediate piers and those forming the abutments, except that in the latter, curtain walls are provided between the piers to retain the earth fill. Hence, these piers serve both as columns to support the vertical load of the deck and as counterforts to take the lateral thrust of the curtain walls. As these curtain walls can serve no useful purpose below an elevation of about 3 ft. below the base of rail, they are not carried below that level, being virtually suspended between the piers. These walls have a normal thickness of 10 in.

Owing to the skew of the structure there are two wings, 43 ft. and 46 ft. long, respectively, that are turned against the embankment, and two other wings 18 ft. and 20 ft. long, respectively, that are on the two corners where they turn away from the embankment. For the two long wings the only practicable solution was to use independent wings designed as reinforced concrete counterfort retaining walls. In the case of the two short wings, however, a study of the problem indicated the economy of extending the wall construction used for the abutments, that is, to build cantilever wing walls projecting from the ends of the abutment. The resulting design is shown in the plan and photographs, and contains only a small portion of the material which would have been required for wings supported on their own footings. Owing to the fact that this extended portion acts as a cantilever in resisting the earth pressure and is of much longer span than the intermediate cross walls, it was necessary to make this portion of the wall thicker, it being 21 in. at the bottom of the inner end. The first section of the abutment curtain wall adjacent to the wing wall is also given a greater thickness, as shown in the horizontal section.

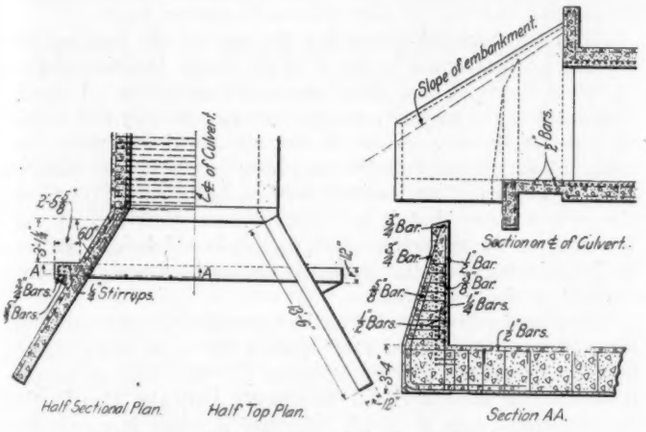


General Layout of the Skew Railway



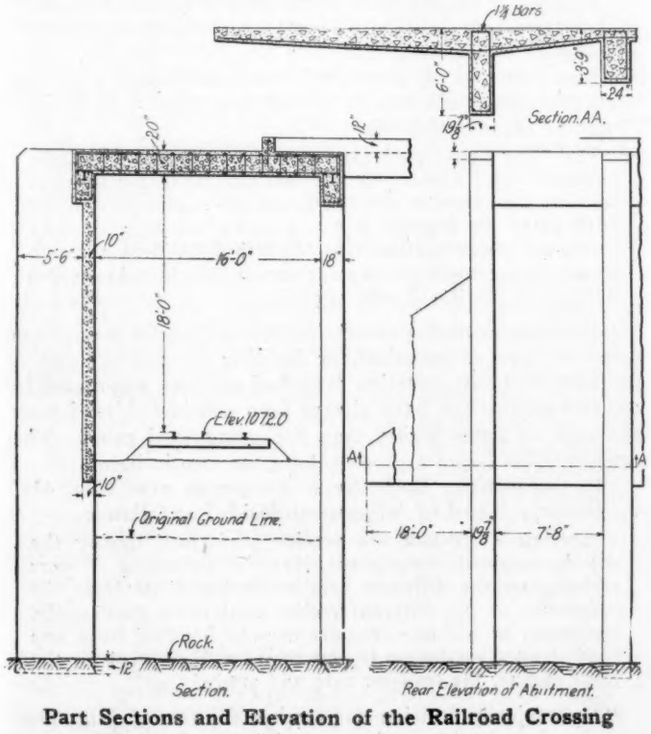
Layout and Details of the Highway Underpass

This structure has a number of other peculiarities that require some explanation. The situation at this crossing is one affording very limited headroom, so that it was necessary to use a relatively thin floor. A still further complication arose from the fact that the two lower tracks are not



Details of Wings for a 9 ft. by 8 ft. Culvert

parallel and are separated by a greater distance than is necessary for operating clearance. To shorten the span length as much as possible, two intermediate rows of supports were provided, so as to form two spans of 16 ft. net clearance for the two tracks, with a short third span in the middle to take up the remaining space. The intermediate piers were made of such length that the floor construction could span crosswise



Part Sections and Elevation of the Railroad Crossing

rather than along the skew and 15-in. 36-lb. I-beams encased in concrete were used for the portions of the two longer spans carrying the major portion of the track load, while the outer portions of these spans and the short intermediate span were designed as true reinforced concrete.

These designs were developed under the immediate direction of Elmer Zarbell, assistant engineer, and under the general supervision of W. H. Courtenay, chief engineer of the Louisville & Nashville, Louisville, Ky.

Award May End Yard Rates for Enginemen

THE PRECEDENTS established by the Wage Board during the period of federal control are continued by law until September 1, 1920, and will probably be continued indefinitely after that date as a matter of policy. Apparently, therefore, precedents, and consequently practices and wages now prevailing in railroad service will continue to be operative. The agitations which have brought about these precedents during the past two years will also be continued without interruption or alleviation. It is this fact which gives a peculiar significance to a majority award and a dissenting opinion rendered in the arbitration case involving the East St. Louis Junction Railroad (Stockyards terminal), and its engineers and firemen with reference to the application of the so-called transfer rate to its switch engines.

The rate for engineers and firemen on yard engines established by the United States Railroad Administration is less than the rate established for engineers and firemen on road engines. In Interpretation 15, to General Order 27, it is held that the road rate shall also apply to engines engaged in various classes of service, neither yard nor road service, but including transfer service and unclassified service. The result of this interpretation has been that the railway brotherhoods have been endeavoring to extend the scope of application of the so-called transfer rate, which in turn means that the road rate is gradually being applied more and more in detail to switch engines engaged largely in yard service. As a result of an instance of this kind a disagreement came about between the officers of the East St. Louis Junction and the representatives of its engineers and firemen and the matter was submitted to arbitration.

Albert Phillips, vice-president of the Brotherhood of Locomotive Firemen and Enginemen, was selected by the employees to serve on the arbitration board. C. E. Smith, consulting engineer at St. Louis, Mo., was selected by the company as its representative and Judge S. J. Peelle was appointed by the United States Board of Mediation and Conciliation as the third member. The latter was later elected chairman of the board.

The majority award, made after hearings held in St. Louis, Mo., on February 3 to 7 inclusive, grants the transfer rate to the engineers and firemen employed on this road. Mr. Smith, dissented from this award and in so doing presented his reasons therefor in a separate brief. In so doing he said, "If this matter involved the East St. Louis Junction alone, the matter would not be of national importance but the application of the majority award to other roads that have similar conditions would in a sense practically wipe out the yard rate for switch engineers and firemen at practically every point in the country where any interchange whatever is made with foreign roads. Manifestly this was never the intent of the establishment of the transfer rate or unclassified service, and the general application of this award as a precedent would remove the differential that has existed between road and yard service. Then would follow a demand by the road engineers and firemen for the former differential."

The Majority Award

The majority award reads in part as follows: "The principal question submitted in the agreement of arbitration is as follows: '(1) Whether the service which the engineers, firemen, and hostlers are engaged in takes and carries the transfer rate pay, and, if not in their entirety, to what extent such employees in said service are entitled to transfer rates.'

"The service under consideration consists of the handling of cars on tracks of the East St. Louis Junction and industrial tracks adjacent thereto, and at times moving cars to and from and over tracks of other railroads.

"Prior to federal control and before the issuance of Gen-

eral Order 27 by the Railroad Administration, the following rates were in effect: engineers $4.55 per day, firemen $2.95 per day.

"Under provision and interpretation of General Order 27, the rates were increased as follows: engineers $5.66 per day; firemen $4.16 per day. The foregoing rates applied to all engineers and firemen and on all engines in the service of the company.

"Under Supplement 15 to General Order 27, a schedule of rates was provided for engineers and firemen in freight service and a separate schedule of rates for engineers and firemen in yard service, with a provision that engineers and firemen engaged in certain designated and unclassified service would be paid freight rates.

"Under Interpretation 1 to Supplement 15 to General Order 27, the following question (No. 85) was submitted to and decided by the director general of railroads.

" 'Is it to be understood that the negotiated rates mentioned under the head of "Special Allowances" in Interpretation 2 to General Order 27, for example, the $4.50 rate for engineers and the $3.00 for firemen, which were increased under the daily table, are to be retained as minima if the rates provided for yard service for the class of engine used do not exceed such rates? Decision: The service comes within the provisions of unclassified service taking through freight rates.'

"In the judgment of a majority of the board the service involved in this case is not wholly transfer service; neither is it entirely yard service; but is rather of an unclassified nature, for which as hereinbefore set forth an intermediate rate (neither yard nor road) has heretofore applied.

"Therefore, there having been in effect a rate which was neither a yard rate nor a road rate, a majority of the board holds that the service comes within the term 'unclassified' as referred to in the above question and decision thereon hereinbefore quoted, and the rate shall be as provided for through freight service, according to size of engines, in Article 4 of Supplement 15 to General Order 27.

Dissenting Opinion of C. E. Smith

As stated before, Mr. Smith, representing the railroad company, did not concur in this award and subsequently filed the following dissenting brief outlining his reasons for refusing to agree to the award:

"The East St. Louis Junction is essentially a terminal switching railroad serving the East St. Louis stock yards, several large packing houses and a number of other industries. The extreme length of its main line is less than 1½ miles. Connections are made with several other railroads. The distance between the head blocks of the various connections of the East St. Louis Junction and the head blocks of the interchange tracks of the connecting roads are as follows:

	Feet
Southern	300
Terminal (E. St. Louis)	900
Wabash	2,100
Terminal (Madison Yd.)	6,100
Wiggins Ferry	6,700
Vandalia	6,100

"As a rule the foreign lines deliver cars at the interchange tracks on the East St. Louis Junction and, to a certain extent, call for and haul cars away from those interchange tracks. The East St. Louis Junction engines move the cars between its interchange tracks and the various stock chutes and industry tracks, and also handle a portion of the outgoing cars over the lines and distances enumerated above to the interchange yards of the various railroads.

"The record shows that the number of cars handled to the interchange tracks of other roads by the East St. Louis Junction engines usually consist of one to four movements a day consisting of comparatively small cuts, most of which do not exceed 10 or 15 cars; although, in an exceptional case 76 cars were handled in one cut double headed.

"Witnesses for the men testified that the work of the engines was divided almost equally between yard switching on the tracks of the Junction and interchanges with other roads. This was later controverted by the sworn testimony of the vice-president of the company, that out of a total of 136 engine-hours daily on the Junction, 4½ hours, which amounts to 3.3 per cent of the total engine hours, would be consumed in making interchange deliveries with foreign roads.

"The brotherhood contended throughout the hearing that the service performed by the East St. Louis Junction engines is transfer service and made no other contention. It is significant that the majority award does not classify this service as transfer service. There is not one word of sworn testimony in the record that the switching service of the East St. Louis Junction is unclassified service, but on the other hand the record states that it has always been classified as yard service; yet the majority award of this board holds, contrary to the evidence, that the service is unclassified and, therefore, entitled to the road rate.

"The brotherhood arbitrator laid great stress upon the fact that where a negotiated rate applied the road rates should have been applied under Supplement 15. Reference to Supplement 15 and the correlated documents indicates clearly that the negotiated rate to which reference is made is a rate that was negotiated to make a higher allowance to the yard switchmen on account of performing transfer service. No evidence was introduced to show that the rates heretofore paid on the Junction were negotiated with any reference to transfer service and it was the conclusion of a majority of the arbitrators, the chairmen and the writer, that the service did not consist of transfer service. As the rate had not been negotiated with any allowance for transfer service in mind, the ruling applying to rates negotiated for that purpose should not apply.

"Practically the majority award was based on Question 85 of Interpretation 1 to Supplement 15 to General Order 27, and the answer thereto.

"The reference to negotiated rates mentioned under the head of 'special allowances' in Interpretation 2 to General Order 27 reads as follows:

> (1) 'The negotiated rate since the arbitration of the engineers and firemen in the east and west, for transfer service, for example, the $4.50 rate for engineers and the $3.00 rates for firemen in the western territory shall be increased under section B of Article 2. Where through freight rates apply to transfer service the increase under Section E, Article 2, will apply.'

"This interpretation clearly relates to transfer service and was not a proper precedent for deciding the case at hand, as the East St. Louis Junction rates had not been negotiated for transfer service but have always been considered yard rates, although at times higher than the going yard rates. That interpretation is not a precedent for the case in hand.

"In the Buffalo, Rochester & Pittsburgh case (No. 417) the Railway Board of Adjustment decided as follows:

> 'Section 1. When the service performed during the day is confined strictly to industrial switching of cars arriving on the different roads mentioned, or from the industries to the different roads, yard rates shall apply. However, should one or more cars be handled from one road to another during the course of a day's work by the joint engine, the transfer rate will apply.'

"The majority decision was reached the same day the hearing closed and without, in my opinion, sufficient consideration of the issues involved. The record was not consulted once and the applicability of the precedents was not carefully considered.

"Although the actual amount of money involved is not extremely large, yet it is large in proportion to the operations and resources of the Junction. The award of the two arbitrators established a new precedent which may have a far-reaching effect. It is unfortunate that such an important question could not have been considered by a board of three competent, disinterested arbitrators."

General News Department

Employees of the Minnesota, Dakota & Western at International Falls, Minn., who have been on strike since December, 1919, returned to work on March 27, after an agreement had been reached between the company and the men. The strike at International Falls became so serious in December that Governor Burnquist of Minnesota ordered the state militia to the town. The troops were not withdrawn until about three weeks ago.

G. H. Parker, controller of the Railroad Administration, has issued a circular to carriers whose property was under federal control, calling attention to section 206 of the transportation act of 1920, requiring payments of final judgments, etc., rendered subsequent to February 29, 1920, to be made out of the revolving fund created under section 210. Chief accounting officers of the carriers must not approve for payment from federal funds any such judgments, etc., or set up in the federal accounts in any manner the amounts of such judgments. Further instructions will be issued outlining the procedure to be followed.

Twelve passengers were injured, one of them fatally, as a result of a collision on the Ninth avenue elevated line of the Interborough Rapid Transit Company, New York City, near the Rector street station on the morning of April 12. Two southbound trains, one of six cars and the other of seven, were running on converging tracks and one of them, running past a stop signal, ran into the side of the other, and one car was knocked off the elevated structure and lodged against a brick building. Some of the injured persons fell to the street. The engineman at fault had been in the service 34 years without before being involved in any serious accident. With the signal which was disregarded there was an automatic train stop, but this was so located as to serve its purpose only for trains moving at very low speed, whereas in this case, the train was moving at a rate considerably faster than the prescribed limit.

The Commission on Car Service.

In a circular addressed to the railroads on April 8, Chairman Kendall, of the Commission on Car Service, American Railroad Association, said that reports from the steel mill districts indicate an extreme shortage of the long low-side gondolas for movement of finished product. At most of the plants the storage facilities have been exhausted, resulting in reduced hours of work, restricting the manufacture and forwarding of shipments for which there is a heavy demand. The situation is further aggravated by the loss of labor which it will be difficult to replace. These cars are not adaptable for coal traffic, and, said Mr. Kendall, "it is very important that each road issue instructions prohibiting the misuse of these cars and providing for their prompt return to the owners, that they may be utilized to relieve urgent requirements."

Memphis Terminal Property to Be Sold

The sale of 18 acres of ground in Memphis, Tenn., originally bought by the Memphis Railroad Terminal Company for the location of a Union passenger station, will be closed shortly. The property was purchased in 1907 by lines entering Memphis and plans for the buildings were drawn up at that time, but, on account of the inability of the proprietary lines to agree in regard to the project, the plan was abandoned. Later two stations were built. One, known as the Union Station, is used by the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, the Southern, the Missouri Pacific and the St. Louis Southwestern. The other, known as the Grand Central station, is used by the Illinois Central, the Yazoo & Mississippi Valley, the St. Louis-San Francisco, and the Chicago, Rock Island & Pacific. The ground has consequently been idle since it was sold to the railroads and recently negotiations were opened by two firms seeking new sites for plants.

Coal Prices Declared Too High

Present high prices of bituminous coal were characterized as inexcusable on any theory of supply and demand or on any economic principle in a formal statement issued by Herbert N. Shenton, secretary of the U. S. Bituminous Coal Commission, which adjudicated the dispute between the soft coal operators and miners. Neither the advice of the commission to buy and store coal early, the requirements of the export trade, the status of car service, the daily output of the mines, the weather conditions, nor supposed shortage of supply explain in any manner the rise in prices, which are out of all relation to the increase in the cost of production caused by higher wages granted by the commission, Mr. Shenton said. After reviewing the factors contributing to the sky-rocketing of prices, he concludes that they will soon decline. Continuing, he says:

"The fear of immediate suffering from car shortage seems to figure in the reasons for the flurry. There were sufficient cars and motive power to distribute this unusual production of the past few months, on account of careful and energetic car distribution. These cars and motive power are practically all available, and, while there is definite need for more or both in order to stabilize the industry, there is no immediate serious threatening of a car shortage such as has not existed during the winter, unless it is necessary, because of emergencies, to divert coal cars for other purposes. The more open weather conditions and the efforts to improve allocation of cars by the Car Service Commission of the American Railroad Association give promise of a greatly improved car situation in the near future. There is no reason to believe that there will be a limited supply of coal for the domestic market. Efforts are being made to stabilize prices through regulations of the Interstate Commerce Commission and by special legislation. The educational campaign for early buying and storage will also tend to stabilize the market. . . ."

Butting Collision on a Staff-Operated Line

On the evening of June 19, 1919, a butting collision between a passenger train and a freight on the East Indian Railway at milepost 763, near Firozabad, resulted in 15 passengers and four men on the locomotives being killed, and a large number of persons injured; and the fire which broke out following the wreck burnt up six passenger cars and caused additional loss of life.

It appears, says the Railway Gazette (London), in speaking of the collision, that the tablet or token given to the engineman of one of the trains was for another section of the road; that is to say, the token for the B-A section was given to the train moving over the B-C section. Just how the mistake was made is not explained. Whether the assistant stationmaster gave the tablet to the signalman to be handed to the engineman, or whether the signalman took it from the stationmaster's table, is not cleared up. The tokens for different sections are differentiated by their shape, and also are lettered; but evidently the men become careless of these details. The East Indian Railway uses Neale's token instrument and also some of Tyer's; but what was used in this case does not appear. The committee which investigated the collision recommended the introduction of some system to make it more difficult for enginemen to start with a wrong token; to improve locomotive headlights; to provide better means of communication between the engineman and the guard on freight trains; to put the rules into a small book

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF FEBRUARY, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (Inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$170,391	$63,079	$248,058	$37,599	$71,549	$7,241	$108,902	$8,921	$237,445	95.72	$10,612	$12,390	—$1,778	$4,278
Alabama Great Southern	312	660,895	154,435	864,227	127,930	246,329	19,916	341,803	21,286	763,759	88.37	100,468	26,550	73,478	66,273
Ann Arbor	301	267,325	44,190	331,762	39,074	88,059	6,536	186,475	10,198	330,375	99.58	1,388	16,700	—15,320	—20,740
Atchison, Topeka & Santa Fe	8,662	11,867,440	3,820,723	16,790,663	1,996,378	3,195,629	138,899	5,419,024	245,656	10,998,386	65.47	5,792,278	679,101	5,112,254	2,433,708
Atlanta & West Point	93	148,431	71,393	247,190	28,397	48,158	6,711	97,022	6,900	191,629	77.52	55,561	7,450	48,111	1,232
Atlanta, Birm. & Atlantic	639	344,691	65,963	440,100	81,472	132,799	14,945	236,206	12,308	477,759	108.56	—37,659	16,000	—53,957	99,875
Atlantic City	177	103,856	105,446	224,619	43,856	34,535	1,086	169,760	1,279	250,597	111.56	—25,979	—14,500	—40,489	—5,976
Atlantic Coast Line	4,892	4,375,759	1,760,749	6,558,805	706,948	1,129,753	82,349	2,693,414	118,214	4,783,299	72.92	1,775,507	—200,000	1,574,899	948,652
Baltimore & Ohio Chicago Terminal	90	.....	—35	193,459	32,242	54,138	1,280	151,704	15,776	258,898	133.82	—65,439	26,542	—91,962	36,345
Baltimore & Ohio	5,154	11,047,285	1,844,390	13,989,718	1,671,321	5,027,693	275,271	7,863,808	406,996	15,354,129	109.75	—1,364,411	682,618	—2,047,791	323,519
Baltimore, Ches. & Atl.	87	58,734	15,911	80,966	8,275	41,936	1,197	69,440	3,950	124,798	154.10	—43,832	3,700	—47,523	41,768
Bangor & Aroostook	658	276,005	56,846	362,167	149,535	117,256	4,325	224,912	10,847	512,738	141.57	—150,572	24,599	—175,172	—165,176
Beaumont, Sour Lake & Western	118	122,103	28,678	158,516	33,315	24,440	1,418	52,887	4,599	116,642	73.58	41,874	2,350	39,512	27,943
Belt Ry. Co. of Chicago	31	.....	.....	370,765	26,596	81,292	316	250,396	6,804	365,404	98.55	5,361	15,682	—10,321	27,293
Bessemer & L. E.	217	573,609	34,477	633,135	24,019	307,248	10,790	281,010	23,724	654,252	103.33	—21,117	13,900	—35,021	9,102
Bingham & Garfield	36	146,704	1,912	150,943	29,624	35,887	2,142	32,910	3,538	105,529	69.91	45,414	7,425	37,987	27,798
Birmingham Southern	31	27,569	.....	37,834	3,420	3,663	794	23,456	3,426	34,759	91.87	3,076	1,754	1,322	—10,191
Boston & Maine	2,257	2,282,838	1,555,376	4,470,285	1,159,094	1,388,563	39,028	3,762,788	177,399	6,556,404	146.66	—2,086,120	239,288	—2,325,477	—1,961,545
Brooklyn Eastern Dist. Terminal	9	66,717	.....	78,260	33,720	96,146	.....	57,533	3,230	190,630	243.58	—112,370	5,943	—118,313	—83,577
Buffalo & Susquehanna	205	195,185	6,143	205,039	29,877	91,532	1,989	88,079	10,801	222,279	108.40	—17,240	3,350	—20,590	1,038
Buffalo, Rochester & Pittsburgh	589	1,070,151	115,935	1,223,042	185,193	520,284	16,650	636,508	31,038	1,391,985	113.81	—168,943	25,000	—193,949	—100,983
Canadian Pacific Lines in Maine	233	121,739	80,447	214,443	49,425	60,597	3,070	188,675	3,211	304,978	142.21	—90,534	12,200	—102,734	—100,130
Carolina, Clinchfield & Ohio	282	400,567	29,025	440,029	75,377	120,394	3,770	169,701	12,953	381,979	86.81	58,051	—8,316	66,356	7,308
Central New England	301	265,570	19,210	309,444	129,076	169,998	2,582	317,305	14,913	633,897	204.85	—324,453	17,800	—342,308	—340,699
Central of Georgia	1,924	1,279,934	503,707	1,980,626	331,502	409,073	33,954	856,094	63,448	1,702,166	85.94	278,460	74,975	203,440	142,138
Central R. R. of N. J.	686	2,272,861	572,705	3,166,087	599,250	1,330,208	25,434	1,987,607	103,459	4,059,172	128.20	—893,086	213,272	—1,106,335	—784,624
Central Vermont	411	253,181	77,823	378,950	94,690	206,667	12,555	353,456	17,440	687,196	181.34	—308,253	17,400	—325,653	—244,183
Charleston & W. Carolina	342	244,598	47,595	307,322	60,955	58,484	6,417	144,297	2,537	272,690	88.73	34,631	8,500	26,131	2,026
Chesapeake & Ohio	2,516	5,222,562	644,780	6,236,381	1,013,404	1,629,156	63,414	2,485,819	123,574	5,339,703	85.62	896,678	189,810	706,397	544,405
Chicago & Alton	1,050	1,439,370	431,406	2,048,702	266,269	629,543	28,738	1,097,469	59,422	2,086,219	101.83	—37,518	70,088	—107,722	—216,462
Chicago & East Illinois	1,131	1,491,932	371,984	2,057,719	118,693	749,809	28,571	1,005,989	48,457	1,961,773	95.33	95,947	85,000	10,829	309,359
Chicago & Erie	269	646,790	47,375	768,993	99,931	199,686	13,636	530,838	25,947	871,971	113.39	—102,979	40,909	—143,932	—189,840
Chicago & North Western	8,090	7,582,402	2,529,363	11,180,934	1,379,805	2,889,367	85,553	6,638,444	266,498	11,363,730	101.63	—182,795	577,178	—762,842	—900,947
Chicago, Burlington & Quincy	9,371	9,614,657	2,369,694	13,216,615	1,664,340	2,909,740	89,435	5,978,108	335,861	11,101,722	83.99	2,114,893	552,683	1,560,655	—237,095
Chicago Great Western	1,496	1,389,220	382,381	1,921,768	214,314	535,377	32,425	996,807	47,508	1,841,908	95.84	79,860	54,976	24,396	—123,818
Chicago, Indianapolis & Louisville	654	722,835	206,385	1,028,605	94,030	305,403	23,198	535,750	30,784	1,001,917	97.40	26,687	47,135	—20,456	—137,278
Chicago Junction	12	.....	.....	289,306	43,911	47,908	637	251,895	6,970	351,321	121.43	—62,015	2,876	—64,891	27,216
Chicago, Milwaukee & St. Paul	10,628	8,434,154	2,026,117	11,595,155	2,218,780	3,898,198	98,803	7,274,478	369,726	13,907,583	119.94	—2,312,428	725,496	—3,047,503	—3,139,034
Chicago, St. Paul, Minn. & Omaha	1,749	1,759,894	576,549	2,511,365	188,890	580,362	20,748	1,283,768	68,384	2,156,337	85.86	355,028	153,436	200,877	26,017
Chicago, Rhode Island & Gulf	463	390,195	104,447	535,944	73,481	105,923	7,037	231,022	13,322	431,306	80.47	104,638	14,017	90,532	46,937
Chicago, Rhode Island & Pacific	7,595	6,848,204	2,206,315	9,738,195	1,393,920	2,425,344	106,498	4,626,156	207,975	8,792,736	90.29	945,459	377,806	566,979	493,410
Chicago, Peoria & St. Louis	247	175,558	22,786	208,129	32,780	89,394	3,202	101,492	8,472	235,300	113.05	—27,171	6,106	—33,287	42,002
Chicago, Terre Haute & S. E.	374	401,724	22,796	432,004	41,511	141,135	6,596	188,892	10,096	389,589	90.18	42,414	18,000	24,414	81,671
Cincinnati, Lebanon & Northern	76	92,998	7,894	114,811	11,931	40,977	2,559	59,800	1,817	117,082	101.97	—2,272	3,972	—6,244	—10,276
Cincinnati, Ind. & Western	321	248,234	47,826	319,846	51,400	142,141	6,941	161,112	13,818	376,358	117.66	—56,512	11,061	—67,573	—23,514
Cincinnati, New Orleans & Texas Pacific	337	1,164,096	271,300	1,521,345	246,809	507,673	33,425	507,647	38,900	1,346,813	88.52	174,531	42,072	131,581	22,124
Cincinnati Northern	251	224,691	17,125	249,506	25,840	46,142	4,763	101,641	6,168	184,553	73.96	64,953	9,615	55,335	34,307
Cleveland, Cincinnati, Chicago & St. L.	2,408	4,962,013	1,203,438	6,743,754	540,553	1,101,397	160,450	2,873,119	118,756	4,813,355	71.38	1,930,399	206,977	1,721,699	1,026,041
Colorado & Southern	1,099	952,225	173,131	1,211,284	141,868	245,525	12,344	369,947	35,608	813,704	67.18	397,580	50,991	346,146	184,629
Colorado & Wyoming	43	11,851	870	60,315	11,737	12,424	183	29,679	3,956	57,980	96.12	2,335	5,000	—2,665	—22,983
Cumberland Valley	163	396,003	72,742	504,751	93,366	91,681	7,220	172,842	14,301	379,395	75.16	125,356	5,853	119,466	178,058
Delaware & Hudson	875	1,925,199	237,988	2,428,366	296,998	899,990	19,975	1,458,427	111,195	2,803,897	115.46	—375,531	78,000	—453,915	—236,973
Delaware, Lackawanna & Western	956	3,732,135	868,505	5,536,045	650,816	1,385,957	81,009	3,009,696	116,925	5,304,873	95.82	231,172	287,500	—56,393	—950,244
Denver & Rio Grande	2,585	2,324,198	434,991	2,933,715	384,626	677,516	38,674	1,038,005	67,437	2,254,107	76.83	679,607	125,000	540,336	421,952
Denver & Salt Lake	255	215,850	24,558	263,404	53,650	100,679	993	162,689	6,506	324,517	123.20	—61,113	10,583	—71,762	27,369
Detroit & Mackinac	376	73,038	27,255	134,788	29,029	60,460	2,290	83,286	6,847	181,910	134.96	—47,122	7,455	—54,577	—24,491
Detroit & Toledo Shore Line	61	116,066	.....	116,752	23,538	19,728	2,363	80,928	7,523	134,080	114.84	—17,328	7,900	—26,559	—104,013
Detroit, Toledo & Ironton	454	319,687	13,144	388,188	39,901	96,497	4,693	190,278	12,499	342,245	88.16	45,943	8,799	36,639	103,076
Duluth & Iron Range	292	107,773	20,204	142,863	81,949	95,254	412	129,812	12,467	320,134	224.08	—177,271	11,023	—188,439	—34,493
Duluth, Missabe & Northern	407	99,680	40,194	169,486	144,413	183,150	2,431	179,395	15,543	526,470	310.63	—356,984	8,948	—365,965	—155,150
Duluth, South Shore & Atlantic	614	202,567	63,605	290,672	60,805	80,888	4,283	193,461	8,169	351,748	120.97	—61,076	20,500	—81,574	—29,967
Duluth, Winnipeg & Pacific	178	169,415	27,262	200,329	26,991	33,412	2,778	90,551	7,360	161,093	80.41	39,237	10,598	28,639	15,390
East St. Louis Connecting	3	.....	.....	152,634	17,027	24,357	231	91,829	3,245	136,689	89.55	15,944	2,000	13,944	29,518
El Paso & Southwestern	1,027	986,005	226,957	1,274,353	322,030	188,077	12,456	304,426	25,873	862,695	67.69	411,658	60,415	351,239	—6,718
Elgin, Joliet & Eastern	831	1,557,394	8	1,838,432	131,975	394,831	5,434	749,534	25,989	1,307,671	71.12	530,761	51,843	478,917	—68,046
Erie	1,989	5,305,064	923,244	7,007,211	959,358	2,838,245	58,352	4,087,594	189,600	8,188,552	116.85	—1,181,340	196,417	—1,378,899	—1,120,616
Florida East Coast	764	625,175	536,003	1,487,731	118,147	224,784	10,776	443,159	18,997	831,110	55.86	656,621	39,583	616,898	497,465
Fonda, Johnstown & Gloversville	88	31,051	60,788	96,753	14,847	9,930	442	36,749	5,112	67,079	69.33	29,674	4,900	24,774	6,760
Ft. Smith & Western	253	117,148	27,834	153,865	36,493	35,833	3,998	69,566	6,708	153,667	99.86	198	5,000	—5,015	—9,776
Ft. Worth & Denver City	452	620,882	296,403	942,809	164,805	206,478	5,648	444,835	25,893	851,354	90.29	91,454	21,900	69,433	—134,919

instead of a bulky one; to light passenger cars by electricity; and to equip passenger trains with ladders and hooks for extinguishing fires.

A Department of Public Works

The question of whether or not the federal government should establish a Department of Public Works has been submitted for a referendum vote to the 1,305 member organizations of the United States Chamber of Commerce. The result of the referendum will determine the national chamber's attitude on this question when it comes up for Congressional action. The desirability of a federal Department of Public Works was suggested by the Engineering Council, an organization member of the national chamber. The Engineering Council believes there is an urgent need in the national government for such a department to carry on the work of an engineering and construction character. The Engineering Council has gone on record as favoring the adoption of the Jones-Reavis bill, now pending in Congress, providing that the name of the executive department at present designated as "Department of Interior" be changed to the name of "Department of Public Works," and that the head thereof shall continue to be a member of the Cabinet under the official designation "Secretary of Public Works." This bill would transfer much of the work now transacted by bureaus under the Department of Interior to other departments and would also place additional bureaus under the new department.

I. C. C. to Create New Bureaus

While awaiting the appointment by the President of the three new members of the Interstate Commerce Commission the commission has been engaged in strengthening its own organization to enable it to cope with the numerous new duties imposed upon it by the transportation act. Early announcement is expected of the creation of a Bureau of Capital Issues to handle the details of the supervision of railroad security issues and of a Bureau of Service to handle matters pertaining to transportation, car service, embargoes, joint use of terminals and other similar matters as to which the commission is given broad powers under the new law. While the commission's most extensive powers relating to operating matters are to be exercised only in case the commission declares that in its judgment an emergency exists, it is regarded as necessary to maintain an organization to keep in constant touch with the situation so that the commission may be prepared to act if necessary. The provisions relative to regulation of security issues do not become effective for 120 days from March 1, when the law went into effect. It is understood that Col. F. G. Robbins, formerly general superintendent of the Erie Railroad at Chicago, has been selected for appointment as director of the Division of Service. Mr. Robbins left the Erie in January, 1918, to accept a commission as major in the Engineer Officers' Reserve Corps, and after some service at Washington in the office of S. M. Felton, director general of military railways, went to France as assistant general manager, Service of Supply, of the Transportation Corps, A. E. F., where he was promoted to colonel. After the armistice he was assigned to the office of the chief of engineers of the Army at Washington.

The commission has recently announced the creation of a new Traffic Bureau, with W. V. Hardie as director of traffic, which has taken over jurisdiction over the Bureau of Tariffs, the Fourth Section Board and the Suspension Board and will have much to do with the adjustment of rates in the various districts or rate groups to meet the 5½ per cent. standard of return. Mr. Hardie when appointed was assistant general freight agent of the Missouri, Kansas & Texas, at Dallas, Tex., and had been assistant to the director of the Division of Public Service of the Railroad Administration. Prior to federal control he had been for ten years with the Oklahoma Traffic Association, an organization of shippers, at Oklahoma City.

It is understood that the new heads of bureaus of the commission are to receive salaries of $10,000 a year, corresponding to those received by the director of the bureau of valuation and the chief counsel.

Traffic News

The Central of Georgia, which owns and operates the sleeping cars on its lines, has applied to the Railroad Commission of Georgia for authority to increase sleeping car rates approximately 20 per cent. It is proposed to make the minimum charge for lower berths $2 instead of $1.50, and for seats in parlors cars 50 cents instead of 45 cents.

The Southern Freight Rate Committee, G. K. Caldwell, chairman, announces the establishment of freight tariff bureaus at Atlanta, Louisville, Richmond, and New Orleans, with the following agents in charge; Atlanta, J. H. Glenn; Louisville, F. L. Speiden; Richmond, J. J. Cottrell; New Orleans, W. P. Emerson. The members of the Southern Freight Rate Committee, besides Mr. Caldwell, are S. B. Mitchell, formerly assistant to the freight traffic manager of the Louisville & Nashville; C. McD. Davis, formerly general freight agent of the Atlantic Coast Line; E. K. Bryan, formerly assistant general freight agent of the Illinois Central; G. S. Rains, formerly assistant general freight agent of the Seaboard Air Line, and L. E. Chalenor (secretary), formerly chairman of the South Eastern Freight Association.

Old Dominion Line

The Old Dominion Steamship Company, one of the best known coastwise freight and passenger lines, making daily trips between New York and Norfolk, has discontinued this line and is going to abandon coastwise business entirely. Control of the company has passed into new hands, and it is proposed to buy larger vessels and go into the trans-Atlantic trade. The Old Dominion Line has been running steamships between New York and southern ports since 1867.

Southern Railway Agents' Association

Six of the principal railways of the south are represented in the list of officers of the Southern Railway Agents' Association, an organization of development and immigration officers which was formed at a meeting at Atlanta, Ga., on April 7. The officers of the new association are: president, W. L. Henderson, industrial and immigration agent, Southern Railway; vice-presidents, J. M. Jones, Seaboard Air Line; J. L. Peeler, Missouri, Kansas & Texas; H. B. Hoyroyd, Louisville & Nashville; W. R. Tucker, Atlanta, Birmingham & Atlantic; secretary, J. F. Jackson, Central of Georgia. Mr. Jackson's office is at Savannah, Ga.

Western Short Lines Ask Rehearing on Mail Pay

The Western Association of Short Line Railroads has filed a petition with the Interstate Commerce Commission asking for a rehearing and a revised finding by the Commission as to the fair and reasonable rates for the transportation of the mails and also replying to the postmaster general's petition for a rehearing. They allege that the rates provided in the commission's decision are not fair to "short line" railroads in general and to the western short lines in particular; and that according to the advice they have received from the postmaster general as to the amounts they are to be paid on the basis of the rates prescribed by the commission the majority of the western short lines that have heretofore been paid on the weight basis for mail service will suffer a very great reduction, exceeding 30 per cent. below what they have been receiving on the basis of the 1917 weighing; and consequently less than the pay based on the 1914 weighing, in spite of the fact that the weight carried increased 100 per cent. on such roads between 1914 and 1917. They express the belief that the commission did not intend thus to reduce pay and that higher rates and differentials can be ordered without necessitating a re-examination of the entire proceeding. The western short lines are represented by Clarence M. Oddie.

Suburban Fares in Canada

The Board of Railway Commissioners for Canada, reporting on complaints of season ticket passengers at Toronto, Montreal and other places, and on proposed advances in fares filed by the railways, disallows the rates proposed by the carriers, but permits them to file new tariffs for commutation passenger traffic, applicable between the points included in the existing tariffs of commutation fares, as follows:

(a) 50-trip tickets, food for 30 days, on the basis of 8½ mills per mile of travel, subject to a minimum charge per ride of 7½ cents.

(b) 40-trip tickets (scholars' tickets), good for 30 days, on the basis of 4¼ mills per mile of travel, subject to a minimum charge per ride of 7½ cents.

(c) 10-trip tickets, good for three months, on the basis of 2.5 cents per mile of travel, subject to a minimum charge per ride of 7½ cents.

Daylight Saving in New England

"Summer Time" has finally been ordered by the Massachusetts Legislature after long discussion, a bill having been adopted to make the standard of the sixtieth meridian the lawful time in that state beginning April 25. The city of Hartford, Connecticut, which adopted the sixtieth meridian some time since, has gone back to the seventy-fifth, because of the refusal of the New York, New Haven & Hartford Railroad to change schedules of trains to accommodate suburban workers; but it is expected that on April 25 another attempt will be made to change the standard. The railroad company has indicated its willingness to change timetables whenever the different communities in Connecticut, Rhode Island and Massachusetts shall come to an agreement as to what they desire.

Daylight-saving bills have been defeated in the legislatures of New Jersey and in New York, but in New York it is said that another attempt will be made this week. The legislature of Maryland has rejected a bill to provide for summer time in the city of Baltimore. At Montreal it is announced that, beginning May 2, the principal Canadian lines will make changes in the times of trains to accommodate the cities and towns which have adopted or intend to adopt summer time.

Southern Rate Committee

Carriers in Southern Classification territory have about completed their rate organization. Lincoln Green, vice-president in charge of traffic of the Southern, will be chairman of the executive committee of the new organization to be known as the Southern Freight Rate Association, which will take the place of the old Southern Freight Rate Association, the Southeastern Mississippi Valley Association, and the Associated Railways of Virginia and the Carolinas. Those associations may not be wholly abolished but, during federal control, they did not function to any extent and the question would be more one of revival than of re-establishment.

The headquarters of the new rate organization will be in Atlanta, Ga. The rate committee has been tentatively agreed on, as follows: G. K. Caldwell, assistant freight traffic manager of the Southern, Washington, D. C., chairman; N. B. Wright, assistant freight traffic manager of the Central of Georgia, Savannah, Ga.; C. McD. Davis, general freight agent of the Atlantic Coast Line, Wilmington, N. C.; E. K. Bryan, assistant general freight agent of the Illinois Central, Memphis, Tenn.; and G. S. Rains, assistant freight traffic manager of the Seaboard Air Line, Norfolk, Va. The appointment of Mr. Davis is not certain, but either he or Roscoe Doss, also connected with the Atlantic Coast Line, will be on the committee.

WHAT IS THE VALUE of an artificially low freight rate if it disturbs industry, leads to freight tieups, to partial or complete shutdowns of production in various communities and to the losses due to such a checking of national energy? For the public the balance is far on the wrong side, leaving entirely out of consideration the injustice done to investors in railroad securities.—*New York Tribune.*

Commission and Court News

Court News

Financial Inability to Perform Repairs Ordered

The Florida Supreme Court refuses to issue a peremptory writ of mandamus to require a railroad company to repair its roadbed and track, "and in doing so to have due regard for" an order of the railroad commissioners giving details for reconstructing the entire line of the company's roadbed and track, especially where the financial inability of the company to comply with the order is admitted.—State v. Taveres & Gulf (Fla.) 82 So. 833.

Carrier Not Obliged to Protect Passenger Against Lawful Arrest

The West Virginia Supreme Court of Appeals holds that although a railroad is obliged to use reasonable diligence to protect its passengers against unlawful assaults, its servants are under no duty to resist or interfere with a known officer in making an arrest of a passenger, unless they knew or by reasonable diligence ought to know that the arrest is unlawful; neither are they bound to make inquiry into such known officer's authority.—Clark v. Norfolk & Western (W. Va.) 100 S. E. 480.

Liability for Brakemen Falling Into Culvert

The Kentucky Court of Appeals holds that a railroad was not liable under the Federal Employers' Limited Liability Act to its brakeman who, to throw a switch for the train, to do which it was not necessary to leave the train at a distance of more than 600 to 700 feet from the switch, voluntarily got off 25 or 30 feet from an unguarded culvert, which was 893 feet from the switch, and in the dark fell into it. Ordinarily, a railroad company is not liable for an injury to an experienced brakeman or switchman, by falling into an open culvert or drain. The company was under no duty to anticipate that the brakeman would cross the culvert and to guard it by barriers.—Manuel v. L. & N. (Ky.) 215 S. W. 280.

Terminal Companies Subject to Hours of Service Act

A terminal company which owned a terminal passenger station and the tracks leading thereto, used by various interstate railroads, sold tickets and checked and loaded baggage for the companies' trains, maintained a telegraph office through which train orders were transmitted, operated all switches to and from its tracks, and through its station master directed the movements of all trains while on its tracks. In a civil suit for a penalty under the Hours of Service Act, the Circuit Court of Appeals, Fifth Circuit, holds that the company is a common carrier engaged in transportation of passengers and baggage by railroad in interstate commerce, although it has no cars or engines, trainmen or engineers. It is subject to the provisions of the Hours of Service Act as to its telegraph operator who transmitted the train orders.—United States v. Atlanta Terminal Co., 260 Fed. 779.

Recovery for Occasional Damage by Flood

The West Virginia Supreme Court of Appeals holds, in accordance with the prior decisions of that court, that where a railroad company or other person by temporary or permanent structures or fills built in a stream obstructs the channel and thereby diverts the regular flow of the waters therein, resulting in occasional damages to the lands of a riparian owner, such damages in contemplation of law are impermanent and temporary, as distinguished from permanent damages, and recovery therefor is limited to the damages as from time to time they occur. In the trial of an action for such impermanent damages it is error to admit evidence of prospective or future damages liable to be sustained by the owner, and an instruction to the jury which does not limit recovery to such temporary damages constitutes reversible error.—Covert v. C. & O. (W. Va.), 100 S. E. 854

Boiler Inspection Act Violation

In an action for the death of a brakeman, thrown under the train when his clothing came in contact with an unguarded hook on the tender of the locomotive, there was evidence that the hook could have been guarded when not in use. The New York Supreme Court, affirmed by the Appellate Division, holds that the question whether the locomotive was equipped with a safe and suitable boiler and appurtenances, as required by section 2 of the Federal Boiler Inspection Act, and the acts amendatory thereof, was for the jury. Whether the hook was the proximate cause of the death was also held a question for the jury. Judgment for plaintiff was affirmed.—Ford v. McAdoo, 178 N. Y. Supp. 631, affirmed 890.

Failure to Fence Evidence of Negligence

The New York Appellate Division holds that the failure of a railroad company to comply with the requirement of New York Railroad Law, § 52, to fence its road to prevent livestock going thereon is evidence of negligence in favor of one suing for the death of a child struck by a train on an unfenced track onto which he had strayed. The court, reversing a judgment of nonsuit on a jury trial, conceded that the decisions in the various states are not in harmony on these fence statutes, but considers that the New York Court of Appeals, in Donnegan v. Erhardt, 119 N. Y. 468, has established that there may be a liability for personal injuries for a failure to comply with this particular statute.—Di Caprio v. N. Y. C., 178 N. Y. Supp. 626.

Lien for "Loss or Damage" Does not Include Overcharge on Freight

An overcharge in freight rates does not entitle the person overcharged to a lien on the railroad's roadbed. In an action for overcharge the Arkansas Supreme Court held that the right to such a lien must exist, if at all, under the provision of the State statute (Kirby's Dig. §6661) providing that "every person who shall sustain loss or damage to person or property from any railroad for which a liability may exist at law shall have a lien on said railroad." It is held that "loss or damage," as used in the section, has no reference whatever to an excess payment of freight rates, but only to loss or injury to the thing itself.—Gallup v. St. Louis, I. M. & S. (Ark.) 215 S. W. 586.

Maintenance of Switching Tracks, Etc., Across Streets

The Michigan Supreme Court holds that where a railroad has built on its right of way switching and storage tracks crossing city streets without the city's permission, and has continued to use the tracks for six years without objection, the city is estopped from requiring the railroad to remove its tracks. It is also held that a railfoad which has incurred considerable expense in building sidings on its right of way before a city council rescinds its resolution granting permission to cross city streets, will be permitted to complete the tracks by extending them to its main track, so as to relieve the situation as to local freight and facilitate the movement of through freight, with safeguards for the users of the streets.—City of Flint v. Grand Trunk Western (Mich.) 174 N. W. 147.

Implied Promise to Pay for Services Rendered Railroad

A postmaster, with an office 200 to 300 feet from a railroad station where mail was delivered, for four consecutive years, under the impression that it was his duty, the situation being known to the railroad, carried the mail from the station to the office four times a day. He then ascertained that the railroad was under contract with the government to do this work. In an action by him the North Carolina Supreme Court held that the railroad was liable to the postmaster for the value of the services rendered for its benefit, under the rule that, in the absence of a special contract, where one person has rendered services of value for the benefit of another, which the latter is under a binding obligation to perform, and such services and the benefits therefrom, not intended to be gratuitous, have been knowingly accepted and received, the law will imply a promise to pay what such services are reasonably worth.—Blackwood v. Southern (N. Car.) 100 S. E. 610.

Foreign Railway News

LONDON.

A daily train service between Ostend and Central Europe is being arranged, and it is hoped that it will begin to run not later than May 1, 1920.

Women Employed on English Railways

LONDON.

In answer to a question in the British Parliament recently it was stated that the number of women employed on English railways on August 1, 1914, was about 12,000, on November 11, 1918, approximately 66,000, and at the end of January, 1920, approximately 30,000.

Higher Rates on Italian Railways

LONDON.

An order has just been issued by the Italian State Railways imposing 100 per cent super-tax on the ordinary rates for foreign merchandise entering Italy. This super-tax is applicable to the distance to be covered between frontier stations and the place of destination.

Strike on Chinese Eastern Railway

LONDON.

A Reuter telegram from Peking states that on March 14 the Rnssian workmen on the Chinese Eastern railway went out on strike owing to General Horvath not replying to their ultimatum to hand over authority in the railway territory to the Provisional Government of Siberia. The Chinese authorities took immediate measures to stop disturbances and warned the strikers that they would be turned out of Manchuria unless they resumed work immediately. The strikers had counted on the co-operation of the Chinese workmen who failed to respond.

Exports of Locomotives in February

The exports of locomotives in February numbered 132 valued at $4,588,074, as compared with 146 in January valued at $4,159,214. The larger part of the February total was consigned to Poland, Italy and Cuba. The detailed figures, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

EXPORTS OF STEAM LOCOMOTIVES IN FEBRUARY

Countries	Number	Dollars
Italy	30	1,114,000
Spain	1	20,125
Canada	6	51,107
Salvador	1	23,325
Mexico	4	41,376
Jamaica	1	12,500
Other British West Indies	1	5,785
Cuba	12	314,815
Dominican Republic	1	7,800
Argentina	3	21,000
Brazil	6	136,505
Chile	1	3,835
China	4	81,537
Japanese China	8	350,680
British India	1	9,650
Dutch East Indies	6	299,040
Japan	2	12,144
British South Africa	3	179,250
Poland and Danzig	41	1,903,600
Total	132	$4,588,074

Railway Strike in Spain

LONDON, March 25.

The railway strike in Spain is spreading to the principal lines throughout the country with a rapidity denoting a widespread organization. The Federation of Spanish Railwaymen recently issued a statement declaring that if the government did not enable the railway companies to increase wages, they would declare a general strike on all lines. On March 23 practically every train in Spain stopped, but there has been no disorder. The government's efforts to maintain a skeleton service have failed, and the railway companies were informed that if a solution is not found at once the government would take immediate steps to end the strike. It is reported that on March 24 the government issued

a royal order advancing to the railway companies a sum sufficient to pay for one month the increase in wages demanded by the employees. The parliament meanwhile will discuss measures to satisfy the requirements of the railway service. This temporary arrangement by which it is hoped to end the strike today leaves the real question open for another government to solve, since the mission of the present cabinet ends with the approval of the budget on April 9.

Committee to Investigate Electrification

A note in this column in the *Railway Age* of April 2 (page 1167), spoke of the formation of a committee in the Ministry of Transport to investigate the electrification of the English railways. The committee in addition to the names given in the item in question will also include Philip Dawson, consulting engineer, and Roger T. Smith, electrical engineer of the Great Western and president of the Institute of Electrical Engineers.

In view of the inquiry about to be undertaken, it may be noted that the London & North Western is contemplating an electrification scheme, which will enable it to run trains between Watford and Euston, a distance of about 17 miles, but this cannot be done until the widening between Queen's Park and Chalk Farm has been completed.

The Midland Railway, under the provision of the Tilbury and Southend Section Purchase Act of 1912, is under obligation to seek powers to electrify the railway.

Proposals for the electrification of the suburban portion of the Great Eastern Railway are under discussion.

The London & South Western Railway is considering the electrification of the portions of its lines not now electrified.

The London, Brighton & South Coast has plans ready for the complete electrification of all the suburban lines not now electrified and is also considering electrification of the main line from London to Brighton, a distance of about 50 miles.

The North Eastern Railway is considering schemes for the electrification of the main line from York to Newcastle, a distance of 80 miles, and also the loop line from Notherallerton to Ferryhill via Stockton, a distance of about 31 miles.

The Great Western Railway is completing the electrical equipment of the line over which the trains of the Central London Railway will run to and from Ealing Broadway.

Exports of Car Wheels and Axles in February

The exports of car wheels and axles in February reached a value of $1,217,199, as compared with only $652,251 in January. Half the February total was included in shipments to France. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

EXPORTS OF CAR WHEELS AND AXLES IN FEBRUARY

Countries	
France	$657,603
Italy	29,250
Russia in Europe	9,000
Spain	123,241
England	175
Ireland	10,616
Canada	55,115
Costa Rica	1,429
Guatemala	25
Nicaragua	98
Panama	1,989
Mexico	48,395
Jamaica	372
Cuba	95,872
Haiti	184
Dominican Republic	1,856
Argentina	5,697
Brazil	2,083
Chile	8,905
Colombia	7,653
British Guiana	363
French Guiana	133
Peru	13,545
Venezuela	519
China	90
Chosen	902
Dutch East Indies	4,450
Hongkong	9,075
Japan	22,910
Russia in Asia	94,320
Australia	1,392
New Zealand	101
Philippine Islands	5,466
British West Africa	120
British South Africa	4,255
Total	$1,217,199

Exports of Railway Cars in February

Exports of freight cars in February totaled 1,986, valued at $3,574,366; of passenger cars, to the value of $83,365; of cars for other railways 677, valued at $400,074, and of parts of cars to the value of $1,747,746. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

EXPORTS OF CARS FOR RAILWAYS IN FEBRUARY

Countries	Passenger		Freight and other		For other railways		Parts of cars
	Number		Number		Number		
Cuba	5	$73,365	431	$577,432	215	$83,010	$115,708
Colombia	1	10,000	12	22,000	3	315	323
France	..	.....	965	1,892,360	200	19,515	1,317,804
Italy	..	.....	506	959,320	...	.....	8,016
Canada	..	.....	10	14,364	23	110,851	72,938
Mexico	..	.....	20	47,700	7	770	1,551
Jamaica	..	.....	29	35,810	30	44,640	40,965
Dominican Republic	..	.....	1	180	56	36,641	14,821
Hongkong	..	.....	12	25,200	...	.....	.....
Costa Rica	..	.....	...	.....	20	1,960	2,165
Haiti	..	.....	...	.....	100	96,150	34,253
Ecuador	..	.....	...	.....	22	5,622	49
British Guiana	..	.....	...	.....	1	600	6,363
Russia in Europe	..	.....	...	.....	...	.....	250
Spain	..	.....	...	.....	...	.....	77,430
England	..	.....	...	.....	...	.....	450
Scotland	..	.....	...	.....	...	.....	2,530
Honduras	..	.....	...	.....	...	.....	1,183
Nicaragua	..	.....	...	.....	...	.....	49
Salvador	..	.....	...	.....	...	.....	286
Argentina	..	.....	...	.....	...	.....	1,789
Brazil	..	.....	...	.....	...	.....	6,290
Chile	..	.....	...	.....	...	.....	1,578
Peru	..	.....	...	.....	...	.....	21,858
Uruguay	..	.....	...	.....	...	.....	1,300
China	..	.....	...	.....	...	.....	2,844
Japanese China	..	.....	...	.....	...	.....	1,651
British India	..	.....	...	.....	...	.....	5,600
Japan	..	.....	...	.....	...	.....	1,861
Russia in Asia	..	.....	...	.....	...	.....	1,300
Australia	..	.....	...	.....	...	.....	3,421
Philippine Islands	..	.....	...	.....	...	.....	280
Belgian Kongo	..	.....	...	.....	...	.....	840
Total	6	83,365	1,986	3,574,366	677	400,074	1,747,746

Exports of Railway Track Material in February

Exports of rails in February totaled 31,241 tons valued at $1,724,970; of spikes 2,787,036 lb. valued at $117,130, and of switches, frogs, splice bars, etc., to the value of $411,538. The detailed figures, as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

EXPORTS OF CAR WHEELS AND AXLES IN FEBRUARY

Countries	Spikes		Steel rails		Switches, frogs, splice bars, etc.
	Pounds		Tons		
Belgium	.....	.....	237	$15,456	$2,204
Denmark	.....	.....	997	59,295	.....
France	.....	.....	4,603	248,186	31,941
Greece	.....	.....	.....	.....	33,848
Netherlands	.....	.....	.....	.....	160
Norway	.....	.....	62	3,783	.....
Russia in Europe	41,000	$2,639	.....	.....	8,176
Spain	.....	.....	669	42,152	1,482
England	.....	.....	.....	.....	2,450
Scotland	.....	.....	712	45,965	672
Ireland	.....	.....	.....	.....	622
Canada	7,980	251	303	20,292	7,688
Costa Rica	31,300	1,579	.....	.....	8,258
Guatemala	.....	.....	.....	.....	17
Honduras	1,000	49	594	35,601	3,957
Nicaragua	.....	.....	.....	.....	1,359
Panama	3,000	288	.....	.....	.....
Salvador	.....	.....	.....	.....	240
Mexico	228,831	9,121	885	49,773	45,379
Barbados	.....	.....	.....	.....	317
Jamaica	.....	.....	16	1,157	5,585
Trinidad and Tobago	.....	.....	1	80	550
Other British West Indies	.....	.....	13	1,028	689
Cuba	855,383	37,872	7,763	422,706	93,679
French West Indies	12,065	584	41	1,826	617
Haiti	.....	.....	.....	.....	2,238
Dominican Republic	61,900	2,218	1,485	76,802	5,865
Argentina	.....	.....	904	58,823	6,271
Bolivia	.....	.....	.....	.....	93
Brazil	229,702	22,386	2,667	105,927	39,910
Chile	36,964	1,124	8	524	263
Colombia	19,720	1,005	132	6,768	8,039
Ecuador	40,000	1,620	.....	.....	43
British Guiana	46,960	1,876	.....	.....	.....
Peru	22,400	862	40	1,143	7,292
Uruguay	.....	.....	164	12,114	10,634
Venezuela	3,000	149	.....	.....	4,411
China	.....	.....	535	27,197	1,091
British India	.....	.....	430	26,636	10,507
Dutch East Indies	36,600	3,350	142	6,034	.....
Japan	418,431	11,360	7,161	412,320	27,247
Russia in Asia	644,000	16,718	.....	.....	.....
Australia	.....	.....	50	3,302	158
New Zealand	.....	.....	252	16,082	1,364
Philippine Islands	46,800	2,059	114	7,179	8,138
British South Africa	.....	.....	150	8,642	27,701
Portuguese Africa	.....	.....	111	8,177	383
Total	2,787,036	$117,130	31,241	$1,724,970	$411,538

Equipment and Supplies

Locomotives

MITSUI & Co., New York, are inquiring for 6 or 12 Consolidation type locomotives for the Taiwan Railway, Formosa.

THE NORTHERN PACIFIC is inquiring for 25 Mikado, 25 Pacific, 20, 8-wheel switching locomotives, and 6 Mallet type locomotives.

THE PITTSBURGH, ALLEGHENY & MCKEES ROCKS has ordered one 0-6-0 type locomotive from the Porter Locomotive Works.

THE STANDARD TANK CAR COMPANY, Masury, Ohio, has ordered one 0-6-0 type locomotive from the Porter Locomotive Works.

CANADIAN NATIONAL.—D. B. Hanna, chairman, announces that orders for equipment totaling $25,000,000 in value have recently been given as follows: Canadian Locomotive Company, Kingston, 45 locomotives; Montreal Locomotive Works, 67 locomotives; Canadian Car & Foundry Company, Montreal, 18 sleeping cars, 12 dining cars, 20 baggage cars, 1,000 box cars, 600 refrigerator cars, 80 cabooses; Eastern Car Company, Trenton, N. S., 500 box cars, 1,150 coal cars, 6 snow ploughs; National Steel Car Company, Hamilton, 1,500 box cars; Preston Car & Coach Company, Preston, Ont., 20 cabooses; Hart-Otis Car Company, Montreal, 350 ballast cars. Part of these orders have already been announced in the *Railway Age*.

Freight Cars

THE NEW YORK, CHICAGO & ST. LOUIS is inquiring for 500 box cars.

THE AMERICAN TRADING COMPANY is inquiring for 4, 30-ton box cars.

THE RICHARD DE COU COMPANY, Philadelphia, Pa., is inquiring for 10 sugar cane cars.

THE BETHLEHEM STEEL COMPANY, Pittsburgh, Pa., is inquiring for 500, 70-ton all steel hopper cars.

THE NORTHWEST TRADING COMPANY, Chicago, is inquiring for 30 underframes and trucks for export.

THE MISSOURI, KANSAS & TEXAS has ordered 150 tie cars from the Mt. Vernon Car & Manufacturing Company.

THE CUBA NORTHERN has ordered 350 box cars, of 40 tons' capacity each, from the American Car & Foundry Company.

J. S. YOUNG & Co., Baltimore, Md., have ordered four 8,050-gal., 50-ton truck tank cars from the Pennsylvania Tank Car Company.

THE SINCLAIR REFINING COMPANY, Chicago, has ordered 500 tank cars from the General American Tank Car Company, and 500 from the American Car & Foundry Company.

THE DONNER STEEL COMPANY, Buffalo, N. Y., reported in the *Railway Age* of March 26, as inquiring for from 500 to 750, 70-ton hopper cars, has withdrawn its inquiry for this equipment.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for 10 steel underframe flat cars of 30 to 40 ton capacity, and 36 ft. to 40 ft. long; also for 50 80,000 lb. capacity flat cars 40 ft. long.

THE UNION PACIFIC, reported in the *Railway Age* of March 19 as being in the market for 2,000 all-steel, 100 per cent drop-bottom general service gondola cars of 100,000-lb. capacity, has ordered 1,000 of these cars from the Ralston Steel Car Company and 1,000 from the Pullman Company.

NEW YORK CENTRAL.—This road has ordered 500 hopper cars from the Pressed Steel Car Company. Through a typographical error this was reported as 50 cars in our issue of April 9. In addition to the 8,000 freight cars let by this road, as reported in the *Railway Age* of April 9, this road will buy 904 stock cars, and 30 milk cars. It is also rebuilding 1,000 all-steel coal cars of 55 tons capacity each.

Passenger Cars

THE UNITED RAILWAYS OF HAVANA are inquiring for 12 third-class passenger coaches.

THE BALDWIN LOCOMOTIVE WORKS is inquiring for 4 sleeping cars and one dining car for export.

THE PERE MARQUETTE is contemplating the purchase of 47 cars for passenger train equipment.

THE LOUISVILLE & NASHVILLE has ordered 13 passenger coaches from the American Car & Foundry Company.

NEW YORK CENTRAL.—This road will buy 11 mail cars and 12 all-steel dining cars, in addition to the passenger train cars recently ordered, as reported in the *Railway Age* of April 9.

THE HUDSON & MANHATTAN, reported in the *Railway Age* of February 20 as being in the market for 25 subway cars, has ordered this equipment from the American Car & Foundry Company.

Iron and Steel

MITSUI & Co., New York, are inquiring for 24,000 tons of 80-lb. rail for the Pekin-Mukden Railway.

THE DELAWARE, LACKAWANNA & WESTERN has ordered a turntable from the American Bridge Company calling for about 100 tons of steel.

THE UNITED RAILWAYS OF HAVANA have ordered 6,000 tons of 80-lb. rail and accessories, from the United States Steel Products Company.

THE CHICAGO, BURLINGTON & QUINCY has awarded a contract to the American Bridge Company, Chicago, for six turntables aggregating 432 tons of steel.

THE NEW YORK CENTRAL has ordered 200 tons of fabricated steel from the American Bridge Company for new bridges to be put up at Rochester, N. Y., and at Canton.

From the Indianapolis News

Just One Ailment After Another!!

Supply Trade News

The Lakewood Engineering Company, Cleveland, Ohio, has awarded to Clarence I. McNair, Jr., of Cloquet, Minn., its first prize of $1,000 for the best essay on industrial haulage, emphasizing the usefulness of tier-lift trucks made by the Lakewood Company.

Charles A. Coons, who resigned as secretary and treasurer of the Paxton-Mitchell Company, Omaha, Neb., on April 1, will enter the railway supply business in Omaha. Mr. Coons has been connected with the Paxton-Mitchell Company for the last 14 years and prior to that time was in the motive power and car department of the Union Pacific for 20 years.

Karl J. Eklund, general manager of Mudge & Co., has been elected vice-president in charge of sales and service. In this capacity Mr. Eklund will also have charge of western sales for the Pilliod Company, Swanton, Ohio, and the Chambers, Lyle Company. Mr. Eklund was born on July 8, 1884, and entered railroad service as a blacksmith's helper in the shops of the Boston & Maine. After three years as an apprentice machinist he was employed on various railroads as a journeyman machinist. In 1908 he returned to the Boston & Maine as machinist and foreman in the Keene, N. H., shops, and on March 1, 1910, he became connected with the Pilliod Company as a valve gear inspector. On February 1, 1915, he was appointed assistant to the president of the Pilliod Company, with headquarters at New York City. He occupied this position until April 1, 1917, when he was appointed assistant to the president of Mudge & Co., Chicago, and served in this capacity until his appointment as general manager on March 1, 1918.

K. T. Eklund

The **H. K. Ferguson Company,** engineers and builders, Cleveland, Ohio, has opened for the convenience of its eastern customers an office at 21 West Forty-third street, New York, in charge of **L. D. Stauffer.** This was incorrectly reported in the *Railway Age* of April 9, as the H. K. Fairbanks Company.

H. U. Morton, vice-president of the Dunbar Manufacturing Company, Chicago, has been elected president of that company, succeeding Thomas Dunbar, who has resigned. The Dunbar Manufacturing Company during the period of the war was engaged entirely on war work and received an award for distinguished service for quantity production of artillery ammunition bodies. The company has resumed the manufacture and sale of its various railway appliances and is also in position to manufacture steel doors for cars, steel pressings, stampings and drawn steel shades.

R. T. Walsh, general sales manager of the Sullivan Machinery Company, Chicago, for the past eight years, has been appointed vice-president in charge of sales and has also been elected a director. Mr. Walsh was born in Massachusetts and received his education at Worcester Polytechnic institute, graduating in 1900. He entered the service of the Sullivan Machinery Company at Claremont, N. H., and after several months was assigned to the western branch of the company at Denver, Colo., as a salesman. In 1906 he was appointed Pacific Coast manager, with headquarters at San Francisco, Cal. He was promoted to European sales manager, with headquarters at London, Eng., five years later, and in 1913 he was appointed as general sales manager, which position he has held until his recent promotion.

The properties of the Southern Locomotive Valve Gear Company, Knoxville, Tenn., have been purchased by **General L. D. Tyson** (former president) and associates, and reorganized as the **Southern Valve Gear Company,** with ample capital and facilities to take care of any and all demands for Southern valve gears and Brown power reverse gears. The officers of the new company are: **General L. D. Tyson,** president; **Forrest W. Andrews,** vice-president; **William Whaley,** general manager, and **H. P. Strayer, secretary.** The headquarters of the new company are at Knoxville.

Haskell & Barker Car Company

Net earnings of the Haskell & Barker Car Company, Inc., Chicago, for the year ending January 31, 1920, amounted to $3,126,653, from which was deducted a depreciation appropriation of $3,000,000 and estimated federal taxes of $1,100,000, leaving a balance for the stockholders of $1,727,653. Quarterly dividends of $1 a share requiring a total of $880,000 have been paid out of the year's earnings, leaving $847,653 as a net addition to the previous surplus.

The income accounts for the year ending January 31, 1920, is as follows:

Gross earnings		$3,743,131
From car department, foundries, discounts and other sources	$534,185	
Less: Repairs, renewals, general maintenance of buildings and other equipment since April 6, 1917, under regulations of 1918 revenue act	81,293	615,478
Net earnings		$3,127,653
Less: Reserve for renewals and replacements	$300,000	
Four quarterly dividends paid	880,000	1,180,000
Surplus profits for year		$1,947,653

Trade Publications

TANK CAR CENTER SILLS.—The Pennsylvania Tank Car Company, Sharon, Pa., describes its type A-1 center sill in a booklet entitled "One Reason Why Pennsylvania Tank Cars Are Used by Leaders of Industry." Although the booklet briefly describes the construction of the sill, it deal principally with tests conducted by Professor Endsley of the University of Pittsburgh at the testing laboratory of the Union Draft Gear Company in December, 1918, to determine the relative strength of the type A-1 center sill, which is patented and used exclusively by the Pennsylvania Tank Car Company, and the type A center sill, now in general use. The booklet contains a number of illustrations.

Photograph from Underwood & Underwood, N. Y.

Traveling on the Trans-Siberian

Railway Financial News

CANADIAN PACIFIC.—See editorial elsewhere in this issue.

CHICAGO & EASTERN ILLINOIS.—William J. Jackson has been appointed receiver succeeding Thomas H. Deeds, who is to remain with the company as financial assistant to Mr. Jackson.

CHICAGO & NORTH WESTERN.—The stockholders at a special meeting approved a new refunding mortgage and authorized the absorption of eleven proprietary companies, all of whose stock is now owned by the Chicago & North Western. The new mortgage will be a first lien on these properties and the bonds are to be dated May 1, 1920. The purpose of the new mortgage is to provide for refunding the entire bonded indebtedness, aggregating $213,653,000, of which $118,770,000 will mature between 1921 and 1948 and for financing, from time to time, necessary permanent improvements, additions, betterments, equipment, etc.

Gordon Abbutt, of Boston, has been elected a director to succeed Henry C. Frick, deceased.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Festus J. Wade, of St. Louis, has been elected a director to succeed Horace E. Andrews, deceased.

NEW YORK CENTRAL.—A syndicate headed by J. P. Morgan & Co. is offering an issue of $36,225,000 New York Central 7 per cent equipment trust certificates, dated April 15, 1920, and maturing at the rate of $2,415,000 annually from April 15, 1921 to 1935. The issue is being offered at par and accrued interest.

NEW YORK, NEW HAVEN & HARTFORD.—This company has received the permission of the Connecticut Public Utilities Commission to issue 6 per cent equipment notes to the amount of $4,813,930.

PENNSYLVANIA.—Percival Roberts, Jr., has resigned as a director.

MICHIGAN CENTRAL.—A. H. Harris has been elected a director to succeed Henry Russell, deceased.

PITTSBURGH & WEST VIRGINIA.—Reports are current that action has been taken by the board of directors looking to the separation of the West Side Belt Railroad from the Pittsburgh Terminal Railroad & Coal Company, and its merger into the Pittsburgh & West Virginia, thus placing all railroad properties in one corporate organization.

THE FAILURE of this strike is certain, even if it should apparently grow worse.—*The New York Times.*

"IF PRIVATE OPERATION be unsatisfactory, the threat of retaking by the government, this time for good and all, will hang overhead. The challenge is for the ablest railroad minds and courageous financiers, under adverse conditions, to render such admirable service that government ownership talk will not be tolerated."—*Roberts Walker, President Chicago & Alton.*

IT WOULD BE FOLLY of the worst sort to permit the railroads to become more inefficient, or even to continue as they now are. The rehabilitation of the railroads ought to have been one of the main points of a careful program of reconstruction, put into operation immediately after the signing of the armistice. Now it is one of the prime needs of the nation, and as it cannot be accomplished without the aid of the national government that aid should be given promptly, along reasonable lines, to an amount necessary to accomplish the purpose required.—*Pueblo (Colo.) Chief.*

Canadian Pacific Railway Company—Thirty-Ninth Annual Report

To the Shareholders:

The accounts of the company for the year ended December 31, 1919, show the following results:

Gross earnings		$176,929,060.00
Working expenses		143,996,023.58
Net earnings		$32,933.036.42
Deduct fixed charges		10,161,509.77
Surplus		$22,771,526.65
Contribution to pension fund		500,000.00
		$22,271,526.65
From this there has been charged a half-yearly dividend on Preference Stock of 2 per cent, paid October 1, 1919	$1,613,638.42	
And three quarterly dividends on Ordinary Stock of 1¾ per cent each, paid June 30, 1919, October 1, 1919, and December 31, 1919	13,650,000.00	
		15,263,638.42
		$7,007,888.23
From this there has been declared a second half-yearly dividend on Preference Stock of 2 per cent payable April 1, 1920	$1,613,638.42	
And a fourth quarterly dividend on Ordinary Stock of 1¾ per cent, payable April 1, 1920	4,550,000.00	
		6,163,638.42
Leaving net surplus for the year (which amount has been placed in reserve to meet special taxes imposed by the Dominion Government)		$844,249.81

In addition to the above dividends on Ordinary Stock, three per cent was paid from Special Income.

2. The working expenses for the year amounted to 81.39 per cent of the gross earnings, and the net earnings to 18.61 per cent, as compared with 78.10 per cent and 21.90 per cent respectively in 1918.

3. The gross earnings of your transportation system during the fiscal year under review exceeded those of any previous year in the history of the company, and exceeded the gross earnings of 1918 by $19,391,362, but the net earnings were less by $1,569,351. This large addition of $20,960,713 to working expenses is due to the great advance in wages and the increased cost of fuel and other materials.

Your Directors cannot hold out any hope of substantial relief for some time to come from these high costs which are reflected so strongly in the operating expenses of the company, but every effort is being made to offset the effect on your revenues by economy in operation and the extension of the company's freight and passenger business. It is not to be expected, however, that any normal increase in business can possibly equal the extraordinary increase in wage and other costs which all railway companies have experienced during the past two years.

4. The sales of agricultural land in the year were 681,763 acres for $13,668,443, being an average of $20.05 per acre. Included in this area were 80,795 acres of irrigated land which brought $52.53 per acre, so that the average price for the balance was $15.68 per acre.

5. There were no sales of 4 per cent Consolidated Debenture Stock, 4 per cent Preference Stock, or other capital securities during the year.

6. The late granting of the necessary statutory authority, combined with difficulty in securing labor and the early setting in of winter in the West, prevented extensive construction during the year of branch line mileage which you authorized at the last annual meeting. Your Directors are of the opinion that reasonable additional construction should be gone on with as conditions warrant, and your authority will be asked for proceeding with the construction of the following lines and for the issue and sale of a sufficient amount of 4 per cent Consolidated Debenture Stock to meet the expenditure, namely:

Wymark-Archive Branch, 25 miles.
Rosetown South Branch, 45 miles.
Weyburn-Lethbridge Branch from Altawan to Manyberries, 35 miles.
Moose Jaw Southwesterly Branch from Consul Southeasterly, mileage 35 to 60.
Moose Jaw Southwesterly Branch from Assiniboia Southwesterly, 30 miles.
Leader Southerly Branch, 50 miles.
Duchess or Rosemary North Branch, 34 miles.
Cutknife to Whitford Lake Branch, 40 miles.
An extension of the Swift Current Northwesterly Branch from Empress Northwesterly, a distance of 20 miles.
An extension of the Swift Current Northwesterly Branch from Sedgewick to Vegreville, 54 miles.

Your directors appreciate that the construction of the above lines can only be proceeded with gradually in view of the probable shortage of labor available for such purposes, but they deem it desirable to obtain your authority in order that the work may be gone on with from time to time as circumstances permit.

7. In order to facilitate the economic handling of traffic in and out of Winnipeg your directors think it desirable to double-track the line extending from Winnipeg to Molson, and, for the purpose of relieving the main line of pressure of traffic during grain shipping seasons, that capital expenditure should be made on the Bassano Branch, extending from Bassano to Java, with the view of raising it to the standard of the company's main line, and thus permitting the expeditious and cheap handling of grain and other traffic from points west of Bassano. The estimated total cost of these works will be about $2,000,000, but in the opinion of your directors the heavy present and prospective traffic in these districts amply warrants the outlay.

8. In anticipation of your confirmation your directors authorized capital appropriations, in addition to those approved at the last annual meeting for 1919, aggregating $3,359,000, and subject to your approval have authorized expenditures on capital account during the present year of $9,613,353. Of this amount the principal items are:

Replacement and enlargement of structures in permanent form	$1,267,144
Additional stations, roundhouses, freight sheds and shops, and extensions to existing buildings	2,009,166
Tie plates, rail anchors, ballasting, ditching and miscellaneous betterments	1,113,599

Replacement of rail in main and branch line tracks with heavier section	979,493
Additional terminal and side-track accommodation	442,363
New coal dock at Fort William Terminals	871,000
Proposed new station and yard changes at Trois Rivieres	500,000
Improvements in connection with Telegraph Service	575,860
British Columbia Coast Service	135,000
Mechanical Department, machinery at various shops	363,236

The balance of the amount is required for miscellaneous works to improve facilities over the whole system and effect.

9. Your directors are making provision for obtaining the following necessary additions to your company's equipment, namely:

3 dining cars,
43 sleeping cars,
67 air dump cars,
2500 sixty-ton box cars,
500 refrigerator cars,

at a total cost of approximately $13,162,000.

10. During the course of the year the following steamships were disposed of, namely:

S.S. Prince George,
S.S. Princess Margaret,
S.S. Princess May,
S.S. Virginian,
S.S. Monmouth.

The S.S. War Peridot and War Beryl, having a dead-weight tonnage of 10,500 tons each, were purchased.

11. You will be asked to approve By-law No. 91, repealing By-law of the same number, naming officers authorized to prepare and issue Tariffs of Tolls pursuant to the provisions of the Railway Act of Canada.

12. The lease of the Nakusp and Slocan Railway, extending from Nakusp to Three Forks, with branches to Sandon and White Water, and having an aggregate mileage of 48.47 miles, which was executed in 1895 and under which the railway of that company was leased to your company for a period of 25 years from July, 1895, will expire in July of the present year. Your directors will therefore submit for your approval a new lease of the railway to this company for a period of ninety-nine years on the usual terms.

13. Appreciating the vital importance to Canada of the success of the Victory Loan of 1919, your company subscribed to $20,000,000, of which $14,000,000 was taken for the company's Special Investment Fund.

14. The Consolidated Mining and Smelting Company, in which your company has a substantial direct interest through its holdings of bonds and stock and upon the success of whose undertaking the prosperity of Southern British Columbia and the consequent traffic for your railway depend to a marked degree, will require during the present year additional sums for needed extensions and additions to its plant. In anticipation of your consent your directors have decided to advance such amounts as may be required pending the making of capital issues or other permanent financial arrangements by the Consolidated Company.

15. Your directors regret to report the death on the 24th of May last of Mr. Wilmot D. Matthews, of Toronto, who had been a director of the company for thirty-one years, and whose advice and counsel have always been of the utmost value to his associates on the Board.

During the year the Hon. James Dunsmuir, of Victoria, resigned as a director. The Hon. William J. Shaughnessy was elected to succeed the Hon. James Dunsmuir, and Sir John C. Eaton was elected to the Board to fill the vacancy created by the death of Mr. Matthews.

16. The undermentioned directors will retire from office at the approaching annual meeting. They are eligible for re-election:

SIR JOHN C. EATON,
MR. GRANT HALL,
SIR VINCENT MEREDITH, BART.,
SIR AUGUSTUS M. NANTON.

For the directors, E. W. BEATTY, *President.*

MONTREAL, March 15, 1920.

RECEIPTS AND EXPENDITURES, YEAR ENDED DECEMBER 31, 1919.

RECEIPTS:		
Cash in hand, December 31, 1918		$39,548,416.63
Surplus revenue as per statement	$22,271,526.65	
Special income as per statement	9,049,341.90	
		31,320,868.55
LAND DEPARTMENT:		
Lands and townsites:		
Proceeds of sales and interest, less cancellations	$14,893,960.31	
Less sales expenses and irrigation	4,284,045.93	
	$10,609,914.38	
Deferred payments on previous year's sales	3,228,239.02	
	$13,838,153.40	
Amount remaining in Deferred Payments on the sales of the year	9,183,640.97	4,654,512.43
Amount received from sales of government securities and repayment of advances to governments		9,017,458.13
Amount of West Kootenay Power & Light Co.'s first mortgage bonds transferred from Miscellaneous securities to pension fund (cost)		35,283.33
Amount applied in reduction of cost of mining and other properties, Exhibit "D"		17,956.58
Increase in current liabilities, rentals of leased lines and coupons on mortgage bonds, and reserves and appropriations		24,740,569.94
		$109,335,065.59
EXPENDITURES		
Dividends on Preference Stock—		
2 Per cent paid April 1st, 1919	$1,613,638.42	
2 Per cent paid October 1st, 1919	1,613,638.42	
		$3,227,276.84
Dividends on Ordinary Stock—		
2½ Per cent paid April 1st, 1919	$6,500,000.00	
2½ Per cent paid June 30th, 1919	6,500,000.00	
2½ Per cent paid October 1st, 1919	6,500,000.00	
2½ Per cent paid December 31st, 1919	6,500,000.00	
		26,000,000.00
Construction of branch lines, Exhibit "E"		1,415,970.35
Additions and improvements, main line and branches, Exhibit "F"		3,095,694.08
Expenditure on leased and acquired lines, Exhibit "G"		1,198,548.55
Shops and machinery		64,452.85
Lake and river steamers		27,115.40
Ocean and Coastal Steamships—		
Payments on steamships acquired and under construction	$10,394,443.06	
Less amount paid from steamship replacement	8,009,690.30	
		2,384,752.76
Deposited with Trustee, Special Investment Fund		6,607,318.59

CANADIAN PACIFIC RAILWAY COMPANY GENERAL BALNCE SHEET, DECEMBER 31ST, 1919.

ASSETS

PROPERTY INVESTMENT:		
Railway, rolling stock equipment and lake and river steamers		$548,458,756.20
OCEAN AND COASTAL STEAMSHIPS, Exhibit "A"		29,894,172.43
ACQUIRED SECURITIES (COST): Exhibit "B"		124,329,836.18
ADVANCES TO CONTROLLED PROPERTIES AND INSURANCE PREMIUMS		8,065,575.66
INVESTMENTS AND AVAILABLE RESOURCES: (Including amount held in trust for 6% Note Certificates, $58,461,538.37)		
Deferred payments on lands and townsites	$66,659,932.43	
Imperial and Dominion Government securities	37,702,580.56	
Provincial and municipal securities	2,031,721.29	
Debenture stock loaned to Imperial Government	40,000,000.00	
Miscellaneous investments, Exhibit "C," Cost	31,762,214.85	
Assets in Lands and Properties, Exhibit "D"	95,211,438.66	
Cash	2,969,683.12	
		276,337,570.91
WORKING ASSETS:		
Material and supplies on hand	$21,990,868.65	
Agents' and conductors' balances	3,618,072.48	
Net traffic balances	809,397.19	
Imperial, Dominion and United States Governments, accounts due for transportation, etc	4,176,804.15	
Miscellaneous accounts receivable	7,576,884.16	
Cash in hand	53,519,420.78	
		91,691,447.41
		$1,078,777,358.79

LIABILITIES

CAPITAL STOCK:		
Ordinary stock	$260,000,000.00	
Four per cent Preference Stock	80,681,921.12	
		$340,681,921.12
FOUR PER CENT CONSOLIDATED DEBENTURE STOCK		216,284,882.10
MORTGAGE BONDS:		
Algoma Branch 1st mortgages 5 per cent		3,650,000.00
NOTE CERTIFICATES 6 PER CENT		52,000,000.00
CURRENT:		
Audited vouchers	10,700,097.44	
Payrolls	4,637,770.33	
Miscellaneous accounts payable	12,006,966.49	
	27,344,834.26	
ACCRUED:		
Rentals of leased lines and coupons on mortgage bonds		570,621.38
EQUIPMENT OBLIGATIONS		7,990,000.00
RESERVES AND APPROPRIATIONS:		
Equipment replacement	3,376,703.28	
Steamship replacement	23,672,436.83	
Reserve fund for contingencies and for contingent war taxes	38,219,661.53	
		65,268,801.64
PREMIUM ON ORDINARY CAPITAL STOCK SOLD		45,000,000.00
NET PROCEEDS LANDS AND TOWNSITES		91,569,599.26
SURPLUS REVENUE FROM OPERATION		127,275,369.58
SPECIAL RESERVE TO MEET TAXES IMPOSED BY DOMINION GOVERNMENT		3,047,871.02
SURPLUS IN OTHER ASSETS		98,093,458.43
		$1,078,777,358.79

J. LESLIE, *Comptroller.*

AUDITORS' CERTIFICATE.

We have examined the books and records of the Canadian Pacific Rail-way Co. for the year ending December 31, 1919, and having compared the annexed Balance Sheet and Income Account therewith, we certify that, inour opinion, the Balance Sheet is properly drawn up so as to show the true financial position of the company at that date, and that the relativeIncome Account for the year is correct.

Montreal, March 8, 1920.

PRICE, WATERHOUSE & CO.,
Chartered Accountants (England).

Securities Acquired—		
Consolidated Mining & Smelting Co. bonds	$2,698,400.00	
Lake Erie & Northern Ry. 1st mortgage bonds	6,700.00	
Nakusp & Slocan Ry. bonds	647,072.00	
Alberta Stock Yards Co., Ltd., preferred stock	430,500.00	
Public Markets, Ltd., of Manitoba, stock	50,000.00	
Trustee securities	2,201,539.69	
		6,034,211.69
Payments on subscription to government loans		2,037,981.25
Payment of equipment obligations		940,000.00
Increase in working assets and advances to controlled properties and insurance premiums		2,782,322 45
		$55,815,644.81
Cash in hand, December 31st, 1919		53,519,420.78
		$109,335,065.59

EXHIBIT "F."

DETAILS OF EXPENDITURE ON ADDITIONS AND IMPROVEMENTS FROM JANUARY 1ST TO DECEMBER 31ST, 1919.

Eastern Lines—		
Additional sidings, buildings, stations and yards	$201,367.45	
Permanent bridges and improvements of line	392,153.25	
		$593,520.70
Montreal Terminals		142,940.44
Quebec Joint Terminals		23,317.77
Western Lines—		
Additional sidings, buildings, stations and yards	$234,394.52	
Permanent bridges and improvements of line	778,058.14	
Fort William Terminals, including coaling plant	47,263.92	
Winnipeg Terminals	2,075.51	
Vancouver Terminals	42,901.75	
Connaught Tunnel	66,009.47	
Right of way	12,680.44	
		$1,183,383.75
Additions to office buildings and hotels		407,107.46
Telegraph extensions and additions		579,738.12
Rented and temporary sidings		165,685.84
		$3,095,694.08

STATEMENT OF EARNINGS FOR THE YEAR ENDED DECEMBER 31ST, 1919

From passengers	$46,182,151.12
From freight	111,064,441.68
From mails	1,483,332.26
From sleeping cars, express and miscellaneous	18,199,134.94
Total	$176,929,060.00

STATEMENT OF WORKING EXPENSES FOR THE YEAR ENDED DECEMBER 31st, 1919

Transportation expenses	$68,054,174.76
Maintenance of way an dstructures	28,912,220.30
Maintenance of Equipment	33,897.727.64
Traffic expenses	3,829,686.56
Parlor and sleeping car expenses	1,861,428.05
Expenses of lake and river steamers	1,335,003.19
General expenses	6,105.783.08
Total	$143,996,023.58

DESCRIPTION OF FREIGHT FORWARDED

	Years Ended December 31st		
	1917	1918	1919
Flour, barrels	13,727,970	13,301,740	12,787,020
Grain, bushels	213,340,507	137,070,428	121,059,921
Live stock, head	2,190.596	2,364,870	2,603,571
Lumber, feet	3,178,554,667	3,241,312,802	3,143,431,200
Firewood, cords	295,277	339,631	279,925
Manufactured articles, tons	10,148,568	9,718,373	7,854,163
All other articles, tons	8,788,423	9,798,523	7,589,275

FREIGHT TRAFFIC

	Years Ended December 31st		
	1917	1918	1919
Number of tons carried	31,198,685	29,856,694	25,102,821
Number of tons carried one mile	14,882,991,224	13,014,665,922	11,121,322,012
Earnings per ton per mile	0.70 cents	0.85 cents	1.00 cents

PASSENGER TRAFFIC

	Years Ended December 31st	
	1918	1919
Number of passengers carried	14,502,546	15,815,982
Number of passengers carried one mile	1,289,280,061	1,776,740,850
Earnings per passenger per mile	2.39 cents	2.60 cents

TRAIN TRAFFIC STATISTICS—FOR TWELVE MONTHS ENDED DECEMBER 31st, 1919, AND 1918

EARNINGS OF LAKE AND RIVER STEAMERS AND OF KETTLE VALLEY RAILWAY NOT INCLUDED IN THIS STATEMENT

	Year ended December 31st, 1919	Year ended December 31st, 1918	Increase or decrease	
			Amount or number	Per Cent
Train Mileage—				
Passenger trains	20,411,110	16,665,928	3,745,182	22.47
Freight trains	19,994,867	22,326,115	—2,331,248	—10.44
Mixed trains	1,943,410	1,966,362	—22,952	—1.17
Total trains	42,349,387	40,958,405	1,390,982	3.40
Car Mileage—				
Passenger:				
Coaches and P. D. and S. cars	110,759,727	82,747,310	28,012,417	33.85
Combination cars	2,400,909	2,366,268	34,641	1.46
Baggage, mail and express cars	46,196,600	40,903,961	5,292,639	12.94
Total passenger cars	159,357,236	126,017,539	33,339,697	26.46
Freight:				
Loaded	494,862,169	539,157,440	—44,295,271	—8.22
Empty	170,620,412	199,157,368	—28,536,956	—14.33
Caboose	23,988,547	25,343,851	—1,355,304	—5.35
Total freight cars	689,471,128	763,658,659	—74,187,531	—9.71
Passenger cars per traffic train mile	7.13	6.76	.37	5.47
Freight cars per traffic train mile	31.43	31.44	—.01	—.03
Passenger Traffic—				
Passengers carried (earning revenue)	15,671,752	14,396,753	1,274,999	8.86
Passengers carried (earning revenue), one mile	1,763,604,596	1,280,533,734	483,070,862	37.72
Passengers carried (earning revenue), one mile, per mile of road	135,727	98,550	37,177	37.72
Average journey per passenger, miles	112.53	88.95	23.58	26.51
Average amount received per passenger	$2.91	$2.12	$0.79	37.26
Average amount received per passenger mile, cents	2.59	2.38	.21	8.82
Average number of passengers per train mile	78.89	68.73	10.16	14.78
Average number of passengers per car mile	15.58	15.04	.54	3.59
Revenue from passengers per passenger car mile, cents	40.32	35.81	4.51	12.59
Total passenger train earnings per train mile	$2.59	$2.15	$0.44	20.47
Total passenger train earnings per mile of road	$4,463.87	$3,078.88	$1,384.99	44.98
Freight Traffic—				
Tons of revenue freight carried one mile	10,926,848,494	12,885,684,625	—1,958,836,131	—15.20
Tons of non-revenue freight carried one mile	1,378,437,805	1,423,459,482	—45,021,677	—3.16
Total tons (all classes) freight carried one mile	12,305.286.299	14,309,144,107	—2,003,857,808	—14.00
Tons of revenue freight carried one mile per mile of road	840,928	991,680	—150,752	—15.20
Tons of non-revenue freight carried one mile per mile of road	106,084	109,549	—3,465	—3,16
Total tons (all classes) freight carried one mile per mile of road	947,012	1,101,229	—154,217	—14.00
Average amount received per ton per mile of revenue freight, cents	1.003	0.847	0.156	18.42
Average number of tons of revenue freight per train mile	498.07	530.44	—32.37	—6.10
Average number of tons of non-revenue freight per train mile	62.83	58.60	4.23	7.22
Average number of tons of (all classes) freight per train mile	560.90	589.04	—28.14	—4.78
Average number of tons of revenue freight per loaded car mile	22.08	23.90	—1.82	—7.62
Average number of tons of non-revenue freight per loaded car mile	2.79	2.64	.15	5.68
Average number of tons of (all classes) freight per loaded care mile	24.87	26.54	—1.67	—6.29
Freight train earnings per loaded car mile, cents	22.15	20.24	1.91	9.44
Freight train earnings per loaded train mile	$5.00	$4.49	$0.51	11.36
Freight train earnings per mile of road	$8.434.11	$8,398.25	$35.86	.43

Railway Officers

Executive

A. E. Sweet, federal manager of the El Paso & Southwestern during federal control and from March 1 general manager, with headquarters at El Paso, Tex., has been elected vice-president and general manager in charge of operation of the same system, effective March 10.

Edward D. Crosley, who has been elected vice-president of the Philadelphia & Reading, with headquarters at Philadelphia, as noted in the *Railway Age* of March 5 (page 746), served as chairman of the Trunk Line territory coal and coke committee of the Railroad Administration during federal control, as well as coal traffic manager of the Central of New Jersey and the Philadelphia & Reading. Mr. Crosley began railroad work as clerk in the office of the auditor of the Indiana, Bloomington & Western, now part of the Cleveland, Cincinnati, Chicago & St. Louis. Afterwards he became chief clerk in the same office. In 1890 he went to the Philadelphia & Reading Coal & Iron Company as chief clerk to the general manager. In September of the same year he became line sales agent. He was appointed resident manager at Chicago in November, 1893. In 1898 he was appointed assistant general freight agent of the Philadelphia & Reading Railroad, and in July, 1907, he became coal freight agent. He later was promoted to general coal freight agent, which position he retained until appointed coal traffic manager under the Railroad Administration.

Financial, Legal and Accounting

I. Walter Booth, who has been appointed secretary and assistant treasurer of the Norfolk & Western with headquarters at Philadelphia, as noted in the *Railway Age* of March 12 (page 805), served as assistant secretary and cashier of the same road from February 1, 1914, until the termination of federal control. Mr. Booth was born on April 1, 1883, at Philadelphia. He graduated from the Central High School at Philadelphia and from the University of Pennsylvania. He began railroad work on May 1, 1902, as clerk and stenographer to the secretary and assistant treasurer of the Norfolk & Western, to which road he has given his entire railroad service. On July 1, 1911, he was appointed chief clerk to the secretary and assistant treasurer and retained that position until February 1, 1914, when, as noted above, he became assistant secretary and cashier.

I. W. Booth

Duane E. Minard, who has been appointed general attorney of the Erie, with headquarters at New York, as noted in the *Railway Age* of April 2 (page 1079), served as assistant general solicitor of the same road until March 1. Mr. Minard was born on April 27, 1880, at Rockaway Valley, N. J. His first railroad service began when he was a clerk in the office of Cortland & Wayne Parker, attoirneys of Newark, N. J., who were retained by the Erie. He became a member of the same firm in January, 1909. He was appointed assistant general solicitor of the Erie in 1912.

H. P. Burns, who has been appointed acting general auditor of the Bangor & Aroostook, as noted in the *Railway Age* of March 5 (page 738), served as chief clerk to the auditor of the same road from 1912 until the termination of federal control. Mr. Burns was born on December 29, 1869, at St. Albans, Vt. He was educated in public schools and began railroad work in March, 1894, with the Central Vermont. From 1904 until 1907 he was chief clerk of freight accounts. He became traveling auditor in 1907 and retained that position until 1912, when he was appointed chief clerk to the auditor.

William H. Smith, who has been appointed comptroller of the Atlanta & West Point, the Western of Alabama and the Georgia, with headquarters at Atlanta, Ga., as noted in the *Railway Age* of March 12 (page 801), was until March 1 auditor of the Atlanta & West Point and the Western of Alabama. Mr. Smith was born on August 31, 1868, at Greensboro, N. C. He was educated in the grammar schools of Charlotte, N. C., and Atlanta, Ga. He began railroad work in September, 1886, with the Richmond & Danville, now part of the Southern. He remained with that road until 1893 as clerk and cashier at Atlanta. He was then appointed traveling auditor. He went as traveling auditor to the Atlanta & West Point and the Western of Alabama in 1901. Afterwards he became freight claim agent and on January 1, 1907, he was appointed auditor. Mr. Smith is a member of the committee on general accounts of the Railway Accounting Officers' Association.

W. H. Smith

L. R. Powell, Jr., who has been appointed comptroller of the Seaboard Air Line, with headquarters at Baltimore, Md., as noted in the *Railway Age* of February 27 (page 658), was born on March 10, 1884, at Portsmouth, Va. He was educated in the public schools and began railroad work on April 6, 1902, as clerk in the office of the auditor of passenger accounts of the Seaboard Air Line. In 1903 he was transferred as clerk to the comptroller's office, in which capacity he served until 1912, when he was appointed chief clerk to the comptroller. In 1913 he became general bookkeeper and filled that position until 1917. He was then appointed assistant comptroller. On September 25, 1918, he became auditor for the corporation.

Alexander H. Elder, who has been appointed general solicitor of the Central of New Jersey, with headquarters at New York, as noted in the *Railway Age* of February 27 (page 661), served as assistant general solicitor of the same road and of the Philadelphia & Reading during federal control. Mr. Elder was born on October 8, 1883. He graduated from Harvard University in 1907, and from Harvard Law School in 1910. In October, 1911, he became legal assistant to Franklin K. Lane, interstate commerce commissioner. Afterwards he served for the Interstate Commerce Commission as examiner and then as chief of the division of prosecution. He became assistant general counsel of the Central of New Jersey in June, 1917, and retained that position until he was appointed assistant general solicitor under the Railroad Administration, as mentioned above.

Walter L. Stanley, who has been appointed general attorney of the Seaboard Air Line with headquarters at Atlanta, Ga., as noted in the *Railway Age* of March 12 (page 806) served as assistant to the federal manager of the same road

during federal control and as staff officer to the regional director of the southern region. Mr. Stanley was born at Wytheville, Va., on May 24, 1871. He graduated from Emory and Henry College at Emory, Va., in 1890 and completed a law course at the University of Virginia in 1891. On May 25, 1892, he entered railway service as local counsel for the Norfolk & Western. From September 1, 1901, until July 1, 1907, he served as claim agent and claim attorney of the same road. He became general claim agent in 1907 and retained that position until September 1, 1916, when he was appointed assistant to the president. On January 1, 1918, he was appointed assistant to the federal manager, as mentioned above.

John B. Duke, who has been appointed general auditor of the Southern Railway, with headquarters at Washington, D. C., as noted in the *Railway Age* of March 5 (page 749), served as assistant comptroller and assistant federal auditor of the same road during federal control. Mr. Duke was born on September 23, 1879, at Jackson, Tenn. He studied at the Southwestern Baptist University and Vanderbilt University. His entire service has been with the Southern, the employ of which road he entered on March 5, 1900, as clerk in the office of the auditor of freight accounts. He was transferred to the comptroller's office on September 1, 1902, and remained there as clerk until 1906, when he was appointed chief clerk to the assistant auditor at Augusta, Ga. He served as chief clerk to the comptroller at Augusta from 1907 until 1909. He was then appointed auditor of revenue and from 1914 to 1916 was assistant to the comptroller. Shortly after the establishment of federal control he was appointed assistant comptroller and assistant federal auditor.

Operating

W. H. Lokey has been appointed assistant trainmaster of the Charleston & Western Carolina, with headquarters at Augusta, Ga., effective April 1.

William W. Berry, trainmaster of the Rocky Mountain division of the Northern Pacific, has been appointed inspector passenger train service, effective April 1.

Howard William McAbee, superintendent of the dining car and hotel department of the Denver & Rio Grande, with headquarters at Denver, Colo., has resigned, effective May 1, to engage in other business.

R. M. Nicoles, prior to federal control superintendent of transportation and telegraph of Western Pacific, with headquarters at San Francisco, Cal., has been appointed general car service agent of the Northwestern Pacific, with headquarters at Sausalito, Cal., effective April 1.

F. E. House, trainmaster of the Erie, with headquarters at Elmira, N. Y., has been appointed superintendent of the Cincinnati division, with headquarters at Marion, Ohio, effective April 1. The Cincinnati division has been newly created and consists of the Marion terminal and the line Dayton to Marion, Ohio, with headquarters at Marion. It is included within the Chicago region.

V. E. Whitaker, who has been appointed superintendent of traffic and transportation of the Atlanta, Birmingham & Atlantic, with headquarters at Birmingham, Ala., as noted in the *Railway Age* of March 12 (page 800), served during the greater part of federal control as superintendent of the Georgia Railroad at Augusta, Ga. Mr. Whitaker was born on February 23, 1881, in North Carolina. He received a public school education at Raleigh, N. C., and began railroad work in the spring of 1898 as a clerk in the office of the Southern at Washington, D. C. In 1900 he became clerk in the agent's office of the Alabama Great Southern, now part of the Southern, and retained that position for about five years, at the end of which time he was appointed soliciting freight agent. In 1907 he went to the Seaboard Air Line as agent and in 1908 to the Cincinnati, Hamilton & Dayton as commercial agent. He was appointed general agent of the Atlanta, Birmingham & Atlantic in 1912 and filled that position until June 1, 1918, when he was appointed superintendent, with headquarters at Fitzgerald, Ga. The following June he was transferred to Augusta, Ga., and remained there in that capacity until appointed superintendent of traffic and transportation on March 1.

Charles E. Brower, who has been appointed general superintendent of transportation of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., as noted in the *Railway Age* of March 12 (page 800), served as superintendent and general superintendent of the same road during federal control. Mr. Brower was born in 1873 at Franklinville, N. C. He received a public school education and began railroad work in October, 1893, as telegraph operator for the Cape Fear & Yadkin Valley, now part of the Atlantic Coast Line and the Southern. In 1897 he became despatcher and continued in that capacity until 1899, when he left railroad service to engage in other business. He returned in 1901, as telegraph operator for the Southern, and remained with that road until July, 1902, when he went to the Atlanta, Birmingham & Atlantic as despatcher and clerk in the superintendent's office. He was appointed chief despatcher in October, 1903, and in March, 1906, trainmaster. He was promoted to superintendent in March, 1913, and served in that capacity until shortly after the establishment of federal control, when he was appointed general superintendent.

J. W. Wassum, who has been appointed general superintendent of the Southern district of the Southern, with headquarters at Birmingham, Ala., as noted in the *Railway Age* of March 5 (page 749), served as superintendent of the Charlotte division of the same road from 1917 until the termination of federal control. Mr. Wassum began railroad work in 1890 as a clerk on the Norfolk & Western. The following twelve years he served as clerk, conductor and yardmaster, consecutively. In 1902 he went to the Seaboard Air Line as general yardmaster at Savannah, Ga. He was transferred to the Portsmouth Terminal in 1905, but returned to Savannah in 1906, and remained there for only two months, when he was again transferred to Jacksonville, Fla. He went to the Southern as superintendent of the Spencer-Salisbury terminals in 1906. He was transferred to Birmingham, Ala., in 1908; to Charleston, S. C., as superintendent of the Charleston division in 1910; to Spartanburg, S. C., as superintendent of the Spartanburg division in 1912, and to Columbia, S. C., as superintendent of the Columbia division in 1914. He was transferred to the Charlotte division shortly before the establishment of federal control.

Traffic

A. L. Shanley has been appointed industrial agent of the Grand Trunk, with headquarters at Detroit, Mich., effective April 1.

J. H. Barr has been appointed commercial agent of the Central of Georgia, with headquarters at Kansas City, Mo., succeeding **H. A. Fletcher,** transferred.

James E. Blake has been appointed assistant general traffic manager of the Cedar Rapids & Iowa City, and **J. S. Reid** has been appointed assistant traffic manager, effective April 10.

G. K. Caldwell, assistant freight traffic manager of the Southern, with headquarters at Washington, D. C., has resigned to become chairman of the Southern Freight Rate Committee and **F. D. Claggett,** general freight agent of the lines west, with headquarters at Cincinnati, Ohio, has been appointed to succeed him, effective April 1.

R. L. Fuga has been appointed assistant general passenger agent of the Alabama & Vicksburg and the Alabama, Shreveport & Pacific, with headquarters at Vicksburg, Miss. **J. R. Morrow** has been appointed district passenger agent at Shreveport, La., and **R. E. Willingham,** district passenger agent at Atlanta, Ga. These appointments became effective April 1.

Earl J. Brittain has been appointed division freight and passenger agent of the Chicago region of the Erie, with headquarters at Dayton, Ohio; **John H. Hackett** has been

appointed division freight agent of the same region, with headquarters at Huntington, Ind.; **Leon B. Smith** has been appointed division passenger agent, with headquarters at Huntington, and **Alva R. Tennis** has been appointed division freight agent, with headquarters at Marion, Ohio. These appointments became effective April 1.

George M. Wood, who has been appointed general freight agent of the New York, New Haven & Hartford with headquarters at New Haven, Conn., as noted in the *Railway Age* of March 12 (page 805), was until March 1 acting general freight agent of the same road. Mr. Wood was born on November 28, 1872, at Newton, Mass. He received a grammar school education and began railroad work on August 1, 1888, in the general freight office of the Old Colony, now part of the New York, New Haven & Hartford. He occupied various clerical positions in the same department until he was appointed chief clerk to the acting general freight agent and afterwards to the general freight agent of the New York, New Haven & Hartford. He was then appointed chief clerk to the freight traffic manager. He became acting general freight agent on September 15, 1908.

Will Albert Terry, whose appointment as freight traffic manager of the New York Central with headquarters at Chicago was announced in the *Railway Age* of March 5 (page 745), was born on March 20, 1864. In 1879 he entered railroad service with the Canada Southern, now part of the Michigan Central, as a telegraph operator. He was later connected with the Ft. Wayne & Jackson, now part of the New York Central, with headquarters at Jackson, Mich., and in 1883, he entered the freight department of the Wheeling & Lake Erie with headquarters at Marietta, Ohio. From 1886 to 1890 he was out of railway service, on the latter date entering the master car builders' office of the Pittsburgh & West Virginia. For a period of six years, from 1891 to 1897, he served successively as commercial agent for the Wheeling & Lake Erie, with headquarters at Pittsburgh, Pa., for the Pittsburgh, Shenango & Lake Erie; for the Cincinnati, Hamilton & Dayton, and for the Cleveland, Lorain & Wheeling (now a part of the Baltimore & Ohio) railroads. In 1903 he was promoted to assistant general freight agent of the Pittsburgh & Lake Erie, with headquarters at Pittsburgh. Seven years later he was appointed general freight agent for that road and later he was again promoted to assistant freight traffic manager, which position he held until his present appointment.

W. A. Terry

Benjamin C. Prince, who has been appointed freight traffic manager of the Seaboard Air Line, with headquarters at Norfolk, Va., as noted in the *Railway Age* of February 27 (page 658), served from May 1, 1919, until the termination of federal control as assistant traffic manager of the same road. Mr. Prince was born in 1877 at Americus, Ga. He studied at Kentucky University in Lexington, Ky., and began railroad work in 1891 as junior clerk to the auditor of the Savannah, Americus & Montgomery, now part of the Seaboard Air Line, at Americus. Afterwards he served in the traffic manager's office of the Chattanooga, Rome & Columbus, now part of the Central of Georgia, at Rome, Ga., and in the general freight office of the Central of Georgia at Savannah, Ga. From 1897 until 1901 he was chief clerk to the traffic manager of the Florida East Coast at St. Augustine, Fla. He returned to the Central of Georgia in 1901 as chief clerk to the division freight and passenger agent at Chattanooga, Tenn. He was appointed commercial agent at Atlanta, Ga., in 1906, and in 1907 he went to the Georgia, Florida & Alabama as traffic manager, with headquarters at Bainbridge, Ga. He became assistant general freight agent of the Seaboard Air Line, with headquarters at Jacksonville, Fla., in 1911, and served in that capacity until 1914, when he was appointed assistant to the first vice-president, with headquarters at Norfolk, Va. He was appointed assistant to the traffic manager in 1918, and on May 1, 1919, he became assistant traffic manager, with headquarters at Norfolk, Va.

Mechanical

Charles I. Hyland, who has been appointed mechanical superintendent of the Toledo Terminal, with headquarters at Toledo, Ohio, as noted in the *Railway Age* of April 2 (page 1125), served as chief boiler inspector of the Michigan Central from January 15, 1919, until the termination of federal control. Mr. Hyland was born on November 3, 1874, at Detroit, Mich. He graduated from the high school at Jackson, Mich., and began railroad work as an apprentice for the Michigan Central in August, 1891. He was promoted to foreman of the boiler department in July, 1906, and left railroad service in November, 1913, to become boiler expert for the Flannery Bolt Company. He returned to the Michigan Central in 1919 as chief boiler inspector, with headquarters at Detroit, Mich.

C. Hyland

F. W. Rhuark has been appointed mechanical superintendent of the Pittsburgh & West Virginia. Mr. Rhuark was formerly master mechanic of the Baltimore & Ohio, eastern lines with headquarters at Connellsville, Pa.

Thomas W. Demarest, who has been appointed general superintendent motive power of the northwestern region of the Pennsylvania, with headquarters at Chicago, as noted in the *Railway Age* of February 20 (page 599), served as superintendent motive power of the Lines West, northwest system, from July, 1903, until the termination of federal control. Mr. Demarest was born on March 18, 1868, at Englewood, N. J., and graduated from Stevens Institute of Technology in 1888. He began railroad work as a special apprentice in the shops of the Pittsburgh, Cincinnati & St. Louis, later a part of the Panhandle, at Columbus, Ohio. He was later assistant to the master mechanic at Columbus and on February 1, 1897, was appointed general foreman of the locomotive department of the same shops. He was promoted to master mechanic at the Logansport, Ind., shops on August 1, 1899, and on January 1, 1900, was appointed superintendent motive power of the Pittsburgh, Cincinnati, Chicago & St. Louis. He became superintendent of

T. W. Demarest

motive power of the Pennsylvania Lines West, northwest system, in 1903, as above noted. His headquarters for some years past have been at Pittsburgh, Pa.

G. S. Edmonds, shop superintendent of the Delaware & Hudson at Colonie, N. Y., has been appointed acting superintendent of motive power, effective April 5, succeeding **J. H. Manning,** deceased.

Alfred E. Calkins, who has been appointed superintendent of rolling stock of the New York Central, lines east of Buffalo, with headquarters at New York, as noted in the *Railway Age* of March 12 (page 805), began railroad work on January, 1892, as stenographer in the transportation department of the New York Central. On March 5, of the same year he was transferred to the general office of the mechanical department. He became chief clerk in the car shop at Rochester, N. Y., on February 15, 1898. On September 1, 1899, he was again transferred to the general office of the mechanical department as assistant chief clerk of the car department and in 1903 he was promoted to chief clerk in the same department. Afterwards he was appointed assistant to the superintendent rolling stock and on August 1, 1918, he became engineer rolling stock, which position he retained until his recent appointment.

A. E. Calkins

James Reed, who has been appointed master car builder of the New York Central, 4th district (west), with headquarters at Englewood, Ill., as noted in the *Railway Age* of March 12 (page 805), served from 1913 until the termination of federal control as an assistant master car builder of the same road, with headquarters at Chicago. Mr. Reed was born in 1869, at Utica, N. Y. He received a public school education and began railroad work in 1888 as car repairer on the Rome, Watertown & Ogdensburg, now part of the New York Central, at Utica, N. Y. In 1891 he entered the employ of the New York Central as inspector at Herkimer, N. Y., and in 1892 he was transferred to Malone, N. Y., as foreman inspector. While serving in that capacity he was stationed at Lyons, N. Y., from 1896 until 1897, and at Rochester, N. Y., from 1897 until 1902, when he became chief joint inspector at Buffalo, N. Y. He retained that position until 1913, when he was appointed assistant master car builder.

Engineering, Maintenance of Way and Signalling

H. D. Row has been appointed division engineer of the Cincinnati division of the Erie, with headquarters at Marion, Ohio, effective April 1.

G. W. Harris, corporate chief engineer of the Atchison, Topeka & Santa Fe System, with headquarters at Chicago, has been appointed assistant chief engineer, system with the same headquarters, effective March 1.

D. J. Brumley has been appointed chief engineer, Chicago terminal improvement, of the Illinois Central, with headquarters at Chicago, effective April 1. Prior to federal control, Mr. Brumley was valuation engineer, with headquarters at Chicago.

R. S. Belcher, superintendent of the Somerville (Texas) treating plant of the Atchison, Topeka & Santa Fe has been promoted to manager of treating plants for that system with headquarters at Topeka, Kan., effective on April 1. He succeeds G. E. Rex, who resigned to become vice-president of the National Lumber & Creosoting Co., at Kansas City, Mo.

A. E. Triplett, division engineer on the St. Louis Southwestern, with headquarters at Pine Bluff, Ark., has been promoted to superintendent, on the St. Louis Southwestern of Texas, with headquarters at Mt. Pleasant, Tex., succeeding H. H. Hooper. Mr. Triplett served as division engineer on the St. Louis-Southwestern for only one month, having been appointed to that position on March 1.

Edgar M. Hastings, who has been appointed principal assistant engineer of the Richmond, Fredericksburg & Potomac, with headquarters at Richmond, Va., as noted in the *Railway Age* of March 5 (page 747), served as resident engineer of the same road until March 1. Mr. Hastings was born on March 5, 1881, in Maryland. He was educated at the Baltimore Polytechnic Institute. During the summers of 1900 and 1901, while he was still studying, he was employed by the Baltimore & Ohio, but his first permanent railroad work did not begin until 1902, when he became chainman and rodman for the same road. He left the Baltimore & Ohio in 1903 and went to the Richmond, Fredericksburg & Potomac as instrumentman. He was appointed resident engineer in 1906 and although his title remained the same until March 1 his duties were meanwhile increased to cover design and supervision of construction and maintenance.

Rudolf P. Forsberg, who has been appointed principal assistant engineer of the Pittsburgh & Lake Erie, with headquarters at Pittsburgh, Pa., effective March 1, was born at Lynchburg, Va., in November, 1870. He entered railroad work in June, 1887, as a rodman on the Lynchburg & Durham, now part of the Norfolk & Western. In 1888 he went, as rodman, to the Richmond & Danville, now part of the Southern Railway, being promoted to levelman and transitman in 1889. During construction of the Yadkin division of that road in 1890 and 1891 he was resident engineer, with office at Salisbury, N. C. He left the employ of the railroad in 1891 to become a draftsman in the office of Charles Read, architect, at Richmond, Va., but returned the following year to the Norfolk & Western as draftsman in the office of the engineer of maintenance of way at Roanoke, Va. In September, 1892, he left that company to go with the New York Central Lines as draftsman in the office of engineer of maintenance of way of the Pittsburgh & Lake Erie at Pittsburgh, Pa., later being transferred to the office of the chief engineer in the same capacity. In March, 1899, he was made chief draftsman at Pittsburgh and in 1902 was appointed assistant engineer at the same place, being promoted to the position of special engineer in July, 1919, from which position he was appointed principal assistant engineer, as noted above.

R. P. Forsberg

Railroad Administration

H. E. Kelly, of Chicago, has been appointed regional counsel for the central western region of the Railroad Administration, and **H. T. White** has been appointed regional claim agent.

Evan Shelby has been appointed regional counsel for the eastern region of the Railroad Administration, with headquarters at New York, and **A. L. Green** has been appointed regional claim agent, also of New York.

M. Stringfellow, district engineer in charge of double track construction on the Southern Railway, with headquarters at Charlotte, N. C., has been appointed regional engineer of the Southwestern Region of the United States Railroad Administration, with office at St. Louis, Mo., effective March 1. Mr. Stringfellow graduated from the University of the South in 1903, and entered the employ of the Southern Railway as levelman on railway location, remaining in the continuous employ of that company until September, 1913, when for a short time he was general superintendent for a contractor. He returned to railway service in January, 1914, as field engineer in the valuation department of the Atlanta, Birmingham & Atlantic. In April of that year he returned to the Southern Railway as assistant engineer in charge of double track construction. In November, 1917, he was promoted to the position of district engineer in charge of double track construction on the Cincinnati, New Orleans & Texas Pacific. In January, 1919, he entered the United States Army, receiving a commission as captain of engineers. Upon his discharge from the army he returned to the Southern as district engineer in charge of double track construction from Washington, D. C., to Central, S. C., in which position he remained until his recent appointment as regional engineer, as noted above.

Special

E. Eugene Adams, consulting engineer of the Union Pacific, with headquarters at New York, has been appointed assistant to the president in charge of purchases, engineering and standards, with headquarters at Omaha, Neb., effective March 1. Mr. Adams was born on September 12, 1881, at Watertown, Mass., and graduated from the University of California in 1904. On August 1, 1905, he entered railway service with the Southern Pacific as assistant engineer and superintendent of pipe lines. He was later appointed assistant engineer and assistant consulting engineer on the Union Pacific system, with headquarters at Chicago and later at New York, which position he held from November, 1906, to February, 1913. On the latter date he was promoted to consulting engineer of the Union Pacific System, with headquarters at New York, and on March 1, 1918, was appointed assistant director of the Division of Capital Expenditures of the United States Railroad Administration, with headquarters at Washington. On January 1, 1920, he returned to the Union Pacific as consulting engineer, with headquarters at New York, which position he held until his recent appointment.

E. E. Adams

John L. Mohun, assistant to E. E. Adams while consulting engineer of the Union Pacific at New York, has been appointed mechanical assistant, with headquarters at Omaha, Neb., effective April 1. Mr. Mohun began railroad work as an apprentice in the Altoona shops of the Pennsylvania. Afterwards he became assistant master mechanic of the Juniata shops. He was then appointed assistant engineer of motive power and master mechanic of the New Jersey division with headquarters at Jersey City, N. J. He became assistant to the consulting engineer of the Union Pacific, with headquarters in New York in 1914.

E. W. Englebright, also formerly assistant to E. E. Adams while consulting engineer of the Union Pacific at New York, has been appointed engineer for the executive officers with headquarters at New York, effective April 1. Mr. Englebright began railroad work in the engineering department of the Southern Pacific in 1903. Afterwards he served as assistant engineer, roadmaster and assistant division engineer, successively, of the same road. He went to New York in 1913 as assistant to the consulting engineer of the Union Pacific, as noted above. During 1918 and 1919, while Mr. Adams was in Washington as engineer of the division of capital expenditures of the Railroad Administration, Mr. Englebright served as corporate acting consulting engineer of the Union Pacific.

Obituary

James H. Manning, superintendent of motive power of the Delaware & Hudson, with headquarters at Colonie, N. Y., died April 15.

J. L. Durrett, formerly assistant general freight agent of the Illinois Central with headquarters at Louisville, Ky., died at his home in Louisville on March 27 at the age of 56.

Marshall T. McCraney, recently appointed general agent of the Chicago, Rock Island & Pacific, with headquarters at Pittsburgh, Pa., died suddenly of acute indigestion, on April 6.

J. C. Jacobs, pioneer railroad builder of Utah, died at his home in Salt Lake City, Utah, on March 24, at the age of 74 years. Mr. Jacobs was connected with the building of a railroad from Salt Lake City to Alta in 1890.

Henry B. Brown, superintendent of the fuel department of the Lehigh Valley died suddenly at his home at Bethlehem, Pa. on April 1, aged 62 years. Mr. Brown had been superintendent of the fuel department of the Lehigh Valley since the summer of 1917 prior to which he was general fuel inspector of the Illinois Central.

W. H. Wells, construction engineer of the Southern, with headquarters at Washington, D. C., died at Athens, Ga., on April 13. Mr. Wells was born on May 7, 1852, at Dalton, Ga. He studied at the University of Georgia during 1870 and 1871. His first railroad work began in 1868 as rodman for the Savannah & Memphis, now part of the Central of Georgia. Afterwards he became levelman and later transitman. He was appointed assistant engineer in 1871. From 1872 until 1874 he was locating engineer. He then became associated with the United States engineering department, with headquarters at Chattanooga, Tenn. He went to the Marietta & North Georgia, now part of the Louisville & Nashville, in 1876 and in 1878 he was appointed division engineer of the Louisville & Nashville. In 1880 he went to the New Orleans Pacific, now part of the Texas & Pacific, in the same capacity and in 1883 to the Mississippi & Rio Grande as locating engineer. He became district engineer for the Mobile & Ohio in 1886 and in 1887 entered the employ of the St. Louis, Arkansas & Texas, now part of the St. Louis Southwestern, in the same capacity. He was appointed chief engineer of the Georgia, Southern & Florida in 1890, and shortly afterwards took an office in New York as consulting engineer. He received his appointment as construction engineer of the Southern in 1895.

The Italian Railway Strike—Military Guards at Milan